A Zoo without Boundaries:

Transforming the Zoos Victoria Website

Report Submitted to:

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This project report is submitted in partial fulfilment of the degree requirements of Worcester Polytechnic Institute. The views and opinions expressed herein are those of the authors and do not necessarily reflect the positions or opinions of the Zoological Parks and Gardens Board or Worcester Polytechnic Institute.

This report is the product of an educational program, and is intended to serve as partial documentation for the evaluation of academic achievement. This report should not be construed as a working document by the reader.

Abstract

In conjunction with the Zoological Parks and Gardens Board of Victoria, our team developed a set of recommendations to renovate the Zoos Victoria webpage. We identified the online needs of key website stakeholders through the use of social science methods and benchmarked these findings against existing zoo and aquaria websites. After data collection and analysis, our team created a document which details short and long-term enhancements for the website and website evaluation tools to gauge the redesign's success.

Authorship of this Document

This document was produced through a collaborative and unified effort of all team members. Each member played an integral part in background research, methodology planning and implementation, data analysis, conclusions, and the creation of recommendations. It would be presumptuous of any member of our team to claim a more important role in project design and execution. Please regard all sections of this report as a single document produced by our team

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Executive Summary

The endangerment of the environment and wildlife has recently become a serious problem in Australia. This dilemma originates partly in human error, but may be reversed through increased environmental awareness. It can be argued that those who feel more connected to the Earth will actively protect the land and its animals. It has also been shown that increased environmental education translates into increased conservation.

The Victoria Zoological Parks and Gardens Board's vision is to promote sustainable interactions between humans and their surroundings. Zoos Victoria fully realises that education is the key to successful environmental preservation and aims to be a hub of both local and remote environmental education and conservation. One manner of environmental education currently being investigated by Zoos Victoria is online learning utilising its website. The Zoological Parks and Gardens Board gave our team the task of developing a set of recommendations concerning the future of the Zoos Victoria website. These website improvements were part of an ongoing plan to enable users to experience Zoos Victoria outside of its physical boundaries. Our goal was not only to provide short- and long-term recommendations for the existing website, but also to develop evaluation tools for the website once renovations had occurred.

To achieve our goals, we determined that visitor, staff, Friends of the Zoos (FOTZ), and teacher opinions about the Internet and the Zoos Victoria website were necessary. We also decided that a thorough analysis of existing zoological park and aquaria websites was required for benchmarking purposes. We began by constructing a comprehensive usability test and evaluating ten randomly selected zoological parks and aquaria websites from Australasia, America, and Europe in the areas of content, technology, aesthetics, and website layout. Next we conducted interviews via reference sampling with five members of the Zoos Victoria volunteer and benefactor organisation, Friends of the Zoos (FOTZ). We then

surveyed 156 Melbourne Zoo visitors face-to-face over a five-day period using systemic sampling. Staff perspective was gathered via forty-five written questionnaires from purposively selected staff members. Finally, six primary and secondary school teachers were interviewed using purposive sampling. Quantitative results from the surveys and questionnaires were analysed using the statistical software package SPSS. Qualitative results from the interviews were analysed using thematic content analysis techniques.

From our data collection, four major themes emerged. The first is that having a children's section is very important to both visitors and teachers. Melbourne Zoo visitors ranked the children's section as the most important aspect of a website while teachers also cited a children's section as being important. We have also discovered that current website advertisement is insufficient based on the strikingly low number of survey participants who had visited the website. We also noted that visitors are not yet willing to use their credit cards online, nor are they willing to give personal information to obtain access to a members-only website. Finally, it was clear from staff questionnaires that navigation of the Zoos Victoria website is difficult.

Based on the data gathered, our team developed a set of recommendations to improve the Zoos Victoria website. The first recommendation is that the content of the website must be improved in both depth and breadth. We also recommend that the aesthetics of the website be improved during a redesign of the website to allow the visitor to navigate the website intuitively. Third, we recommend improving the navigation of the website through an enhanced navigation bar, search feature, and site map. The fourth recommendation is to improve the use of technology on the website by establishing a message board and chat rooms, and increasing the number of webcams. Finally, we recommend integrating the three facilities into one cohesive website.

Our team's findings and recommendations will be applicable to many agencies interested in online education. In addition, the Zoological Parks and Gardens Board will be able to create a new website better suited to realise its vision of online environmental education. The website will become a forum of technical and educational communication for Zoos Victoria staff, visitors, teachers and their students. Furthermore, the website will be more effective in educating people about environmental problems and the steps that Zoos Victoria has taken to ameliorate these concerns.

Introduction

The destruction of the environment and the endangerment of wildlife have recently become a serious problem in Australia. To combat this problem, Victoria's Zoological Parks and Gardens Board is dedicated to environmental and animal conservation through education of the general population. One identified possible method of education is the Internet. The Zoological Parks and Gardens Board, with the assistance of Worcester Polytechnic Institute, desired to investigate the dissemination of educational information about the environment via the Internet.

Maintaining balance in the environment is an extremely important aspect of life. The environment supports the human species by providing food, shelter, water, clothing, and all the other necessities and luxuries humans expect. Due to the growing need of resources from the environment, humans are continuously destroying the land. Over the years, humans have purposely or unintentionally threatened or killed many species of plants and wildlife through daily interaction. If individuals were aware of the damage they were causing, and knew how to prevent destruction of the ecosystem, some would choose to help combat the environmental crisis.

There has been a growing concern that human and environmental interaction must be sustainable in order for the ecosystem to survive. Zoos believe that through educating the public about the environmental crisis and different methods of conservation, negative human impact on the environment can be reduced. The Melbourne Zoo, Healesville Sanctuary, and Victoria's Open Range Zoo are dedicated to education of the local and worldwide community. With strong and influential educational programs, their goal is to reduce the destruction of the ecosystem and encourage human behaviour that will lead to a sustainable environment.

The Department of Discovery and Learning wishes to further develop their educational resources in order to combat the destruction of the environment. The widespread use of the Internet provides a viable option for distributing information. The Department of Discovery and Learning hopes to utilise the Internet as a method of disseminating knowledge to the general population. Our primary goal was to develop a set of recommendations to advise the Zoological Parks and Gardens Board (ZPGB) in the creation of an effective website. In addition, a second goal was to develop questions to be included in an online survey of Zoos Victoria website visitors. Our third goal was to construct a usability test for use by Zoos Victoria to further evaluate the website after it has been revised.

To accomplish our project objectives, we surveyed visitors, staff, volunteers, and school teachers. We also reviewed other zoological parks and aquarium websites. By pre-testing the questions for the written survey and interviews, we minimised intersubjectivity. Also, by using three methods with various sampling techniques we decreased the effect of bias.

After we obtained and analysed our data, we made recommendations for constructing an effective website for the Zoological Parks and Gardens Board in Victoria. Our recommendations addressed issues such as target audience, suggested structure, aesthetic design, page layout, content, and subsections for demographic groups. It also included integration tips for unified website design between the three separate parks. Both the Zoological Parks and Gardens Board and other educational organizations may be interested in our findings. These groups will be able to use the general information contained in our report to improve their educational websites. Once the Zoological Parks and Gardens Information Technology department has our guide, they can begin development of an improved website to stimulate the public's interest in environmental concerns.

Literature Review

In order to prepare the project team for work in the fields of environmental protection, education, and websites, the following literature review provides the necessary background information. First, the overall problem of environmental destruction and animal endangerment is presented. Next, the current environmental position in Australia and human concern for the environment is discussed. This section is followed by the potential of the Internet as an effective educator and website design standards. After reviewing this information, the project team possessed the necessary background information to begin a cohesive research program, which resulted in recommendations to Zoos Victoria about a new website.

Environmental Destruction & Animal Endangerment

The environment is constantly changing as more species are becoming endangered and the environment is being destroyed. The human species has contributed largely to both the conservation and destruction of the environment. Many times, attempts to conserve one species of wildlife have resulted in the decline of another species. Some of these human activities unintentionally destroy the environment; however, there have also been conscious acts against wildlife. Environmental dilemmas such as deforestation, livestock trade, and the introduction of foreign wildlife are just a few of the problems on the rise (Moulton, 1999). All these actions and more are significant to the environmental crisis in Australia.

One such environmental condition was the appearance of wild herds of animals which has led to overgrazing in the savanna. The species not native to Australia are less likely to be restricted by predators and infections, leading to an even larger increase in the feral herd size. This situation occurs because the predators have not experienced this new prey before and therefore do not know how to handle it. Naturally, each animal is either a predator or prey, and when the balance of the two is interrupted, the life of some becomes threatened

(Moulton, 1999). Australia's marsupial population has been under protection for many years; however, this conservation method caused a devastatingly large increase in the populations of five different species of kangaroos. These kangaroos have become a nuisance by destroying vegetation and land needed for other animals (McClung, 1976). Without natural selection and limitations imposed by the native wildlife, wild herds will overgraze the land. Through the distribution of information concerning sustainability, Zoos Victoria can help to maintain the balance in the ecosystem.

The introduction of foreign matter into new environments affects more then just the animal world. Humans have introduced various plants into Australia that are not native to the land and, consequently, have disrupted the ecological balance. Depending upon the growth style, vegetation can block sunlight, water, or ground nutrients from native plants; therefore, threatening their existence (Goudie, 2000).

Human destruction to the environment can occur accidentally or deliberately. Deforestation is a problem in many areas of the world, including Australia, because it not only takes away the animals' homes, but it also increases recharge rates of the groundwater and increases the salinity of streams (Goudie, 2000). The amount of water being added to the ground is groundwater recharge. If the amount added to the ground is more than is being taken away, the water table rises, bringing with it an increase in concentration of salt at a higher level in the soil (Environment News Service [ENS], 1999). Due to the cutting down of trees, less water is being reabsorbed out of the soil through the tree roots, thus, increasing the groundwater recharge. The clearing of trees for agriculture has caused this problem of dry land salinity; therefore, planting new trees may restore the condition of the land.

Sunlight is very important to the development of life; however, when the UV rays are not filtered by the earth's atmosphere they can be extremely dangerous. The ozone layer is the part of the stratosphere that is responsible for absorbing the ultraviolet radiation. A hole

in the ozone layer has been discovered over the South Polar Region. Factors contributing to this destruction are mainly caused by human manufacturing of products such as refrigerant systems, foam fast-food containers, nitrogenous fertilizers and aerosol spray cans (Goudie, 2000). The hole is not only caused by human action. Climatic factors, such as the low winter temperatures, many hours of sunlight in the summer, and the existence of a vortex, a strong wind current, also adds to the formation of the Antarctic ozone hole near Australia.

Deliberate or accidental human actions such as the deforestation or destruction of the ozone can be detrimental to a specific species. However, when the homeostasis of the ecosystem is disrupted, the growth cycle of all plants and animals will be affected. In trying to improve the quality of human life, many people have altered the relationships that exist within the circle of life. Realizing what they have done, individuals are now attempting to mend the mistakes made in the past by effective and efficient preservation of the ecosystem.

Current Environmental Position in Australia

In order to develop viable recommendations for the Zoos Victoria website, the public's current attitudes towards the environment must be analysed. After this information was attained it was used to develop a proposal for a website that presented and addressed these concerns more effectively. One method of indirectly judging public sentiment on an issue was to analyse recent laws passed because these decisions often reflect popular opinion. This assumption was inherently contained within a parliamentary system, in which the voters elect officials, and the officials were directly responsible for the wants and needs of their electing group. Furthermore, other groups and individuals have studied this assumption. Hawker, Smith, and Weller (1979) describe the policy making process in Australia as sequential, the first step being a demand from the community, vocalized through the media and various pressure groups. Diana Mutz (1997) also tested this assumption in a survey conducted during the 1992 U.S. Democratic presidential primary season. Using an

experimental design embedded within the survey, she found that mass opinion changes regarding an issue resulted in shift of candidate stance and preference on this issue.

Based on the rationale that public sentiment is directly reflected in government legislation, the conservation of wildlife and the environment became increasingly important in Australia, as viewed by the recent increase in environmental law ratification. Environmental Acts passed were the Wildlife Protection Act (1982), the Ozone Protection Act (1989), the Endangered Species Protection Act (1992), and the Environment Protection and Biodiversity Conservation Act (1999). These Acts laid out definitive plans, optimistic timetables to achieve environmental goals, and created the proper machinery to realize these goals. Furthermore, these Acts constituted a cohesive and total procedure for all major aspects of environmental concern. As stated before, government legislation comes into existence only after the population voices a problem; legislation is largely a reactive measure. Based on this assumption, the people of Australia have become increasingly environmentally conscious within the past few decades.

However, other experts argued that public opinion and subsequent government legislation have little correlation. McElrath (1973) stated that society, with occasional and quickly passing indignation, was indifferent towards the environment. Only the politically dedicated are genuinely concerned and they are often at odds with one another. Rosenbaum (1985) elaborated on the argument of environmental indifference, stating that competing interest groups who use national authority to further their own agendas set environmental policy: public opinion on an issue has little impact on the final legislative decision. Recent polls conducted by the Australian Bureau of Statistics (ABS) also agreed with this claim. According to a 1999 ABS survey, as seen in Table 1, only 9 percent of adult Australians considered environmental problems as the most important social issue, despite the recent influx of environmental legislation (Australian Bureau of Statistics, 1999).

Table 1. Most Important Social Issues to Adult Australians – 1999

Issue	Percent (%)
Health	29.7
Crime	25.5
Education	16.6
Unemployment	13.3
Environmental problems	9.0
Interest rates	3.1
Can't decide/don't know	2.8

***Source*: Australian Bureau of Statistics. (1999). Environment Attitudes and Behaviour in Australian Households. Belconnen, ACT.**

The most frequently cited issue was health, followed by crime and education. Of the 91 percent of people who did not believe that the environment was the most pressing social issue in 1999, 69 percent expressed concern for environmental problems, down from 75 percent in 1992. The proportion of people expressing concern slowly declined since 1992, as viewed in Figure 1.

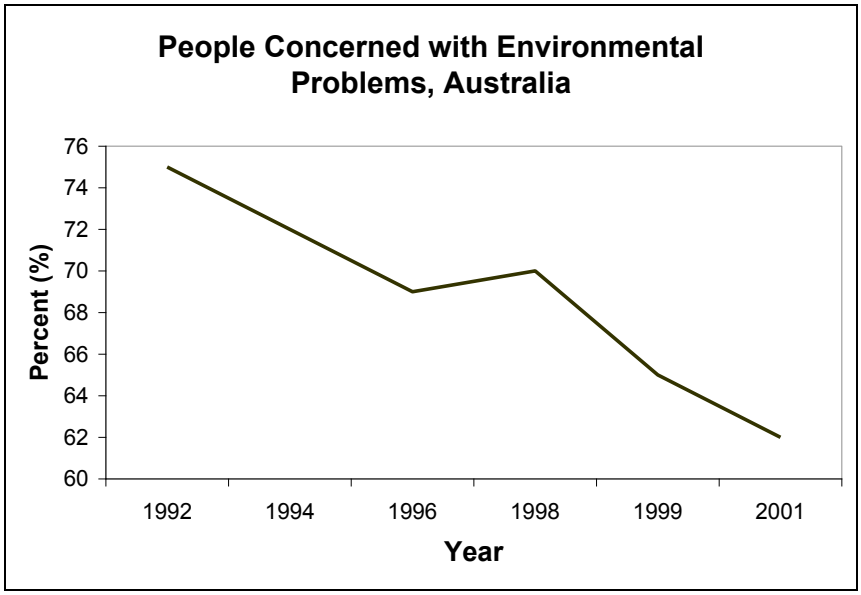

Figure 1. Australians Concern for Environmental Problems. (ABS, 2001)

Time and money donated to environmental protection has also declined in every state and territory since 1992 (Australian Bureau of Statistics, 2001). Figure 2 depicts this trend.

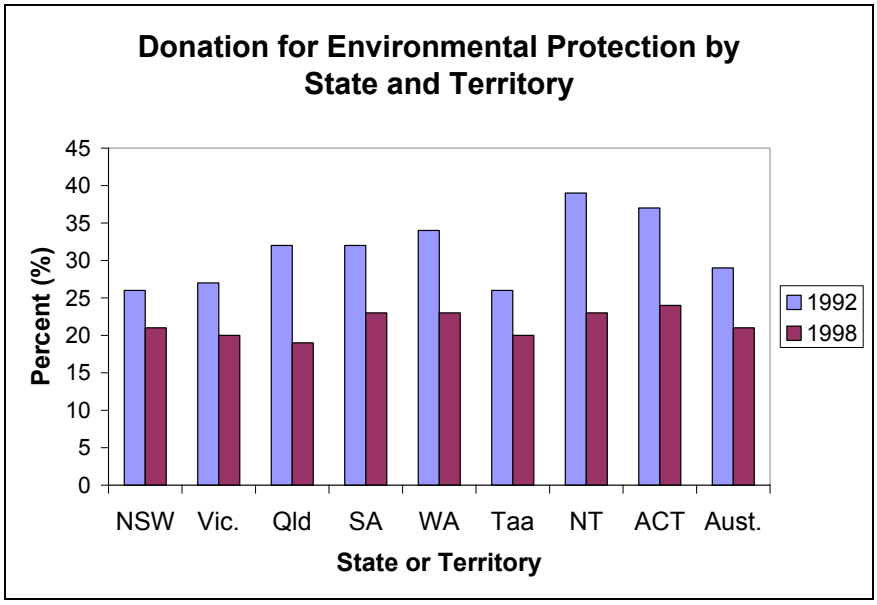

Figure 2. Australians Donating Time or Money for Environmental Protection. (ABS, 2001)

The Commonwealth of Australia experienced an overall time and money donation drop from 29 percent in 1992 to 21 percent in 1999. The increased environmental complacency may have been a result of a general indifference or ignorance among the public, or also a result of effective commonwealth legislation. There was no literature pertaining to the effect of this recent legislation on public sentiment, but the apparent decline of environmental concern among Australians is an important topic that was addressed during the course of this project.

Human Concern for the Environment

It was valuable to our project to investigate alternative environmental views so that we could eliminate bias associated with public opinion and be more objective with our research. Some believe that the environment is not just made up of the physical plants and animals that surround the human world. It is something less tangible, more like a intertwining of different aspects of the natural world (McLuhan, 1994). There exist many different religions and beliefs pertaining to the treatment of nature, all of which have the basic understanding that humans and nature are one entity. Once people realize this situation,

they can better understand the relationship between humans and nature, as well as the condition of the environment.

Many views of nature have their origins in Buddhism. The Eastern theory of "paticca samuppada" means "dependent corrigination" and implies that all living things are dependent on each other (Parachin, 1999). After experiencing and learning of this belief, some people realize that our actions as humans affect the rest of the environment. The concept of "interbeing" is of importance in some cultures, especially Buddhism. The community that supports this belief promises to understand and encompass kindness and consideration for all things that inhabit the earth, whether it is people, plants, or animals (Parachin, 1999). Thich Nhat Hanh, a Buddhist monk, founded the Order of Interbeing (Tiep Hien Order) in the 1960s to support the ideas of compassion and harmony. As this inspiration is gradually welcomed into other cultures, people will realize the co-existence of humans and nature, leading to concern about the condition of the environment (Parachin, 1999).

Another view of nature is taken from the Native American Apsaaloke belief that there is a special, personal, and respectful relationship between the humans and the earth (Grim, 1994). In their views, the Native Americans believe a person has to be open to interaction and sensitivity regarding the natural world. Also, there exists a Koyukon belief that some animal names are *hutlaane*, or prohibited, since the animal and its spirit are viewed as one (Grim, 1994). Whenever the name is mentioned, the person who says the name is at risk for something horrible. These bans instituted by the Native Americans can be viewed as a method of protecting the environment from mistreatment by humans. Traditions and values adopted by groups such as the Native Americans and Buddhists incorporate nature into the society of which everyone and everything belongs.

The Aboriginal people of Australia still maintain a strong feeling about the land and its value (McLuhan, 1994). In the past it was believed that Aborigines did not possess the

technology and advancement to correctly care for the environment. More recently, however, people have become aware that the Aboriginal views on the environment are in fact, highly sophisticated and it was because of these indigenous people that Australia was founded (Coward, 1998). Aboriginality is a belief in which everyone can share. It is a belief that everything on the Earth is mutually dependent on another (McLuhan, 1994). Australian Aborigines recognize when they harm the environment and hold themselves accountable. Then they mend the repercussions of their actions. Recently, in attempt to reclaim what they lost, Australian Aborigines have been arguing with non-Aboriginal Australians over the physical rights of the territory and are also struggling with preservation of the cultural tradition associated with the land (McLuhan, 1994). However, after the non-Aboriginal Australians have been educated about the indigenous beliefs, they will understand that the Australian Aborigines possess the principles in which lie the solutions to the environmental crisis (Coward, 1998)

Once people realize not only the physical relationship but also the spiritual interconnectivity of nature and human beings, then they can begin to piece together different aspects of their life. This underlying feeling of responsibility to nature is what propels some humans to be concerned about the environment (Hanh, 1988). Given that belief, fundamentally, humans are one with all the plants and animals of the ecosystem. Without the ties to one another, each species cannot survive, both physically and spiritually (Hanh, 1988). The human desire to become educated about nature is important to the Zoological Parks and Garden's Board because it is essentially what attracts people to the Zoos, as well as to the website. Once some people establish this connection between all facets of the ecosystem, they may be much more willing to put time and effort into counteracting destruction of the environment and learning about nature.

The Internet as an Educator

To disseminate the information about the environment, animals, and mankind's interactions with the entire ecosystem, the Zoological Parks and Gardens Board identified the Internet as one possible medium for education. The Internet is an easy way of getting information to many people at the same time. By utilizing the ability to communicate with people around the world, the Internet can be put to very good use in education. This makes the assumption that the people to be educated have access to the Internet and are the audience the website is trying to target. Australia's National Office for the Information Economy (NOIE) performed research to identify groups and areas that have little or no access to the Internet. NOIE then worked to help these populations achieve access (NOIE, 2000). NOIE's goal was to assist Australians in utilising the Internet in their economy and community (NOIE, 2000). Part of this aim was the ability for Australians to access the Internet for education. The Internet and education could be at odds when the content of an educational website is poorly designed. Therefore, education on the Internet needed to be approached carefully and correctly to ensure good content, interesting pages, and most of all, the presence of effective education.

Accessing the Internet

In order for the Internet to be successful, everyone must be able to access it (Wardle, 1997). Online access is critical, especially in education. If the students are not able to access the information, they will not be able to learn the information. In Australia the government recognised the potential of the Internet in general and as an educational tool. The government worked to understand who needs access and how to get them access (NOIE, 2000). The government made one assumption that not all people would agree with. They assumed that everyone wants to be online. In one comprehensive report named The Current State of Play (NOIE, 2000), NOIE identified the demographics of the online Australian

community, assessed Australia's readiness to be an Internet society, and determined the impacts of the rise in Internet activity. The Australian government strongly demonstrated its commitment to make access possible for everyone so that the Internet could reach its potential.

Before NOIE could provide access, it needed to understand who lacked the Internet. To do this, NOIE conducted major research on accessibility and other factors (NOIE, 2000). In the Current State of Play, NOIE found that 42 percent of the Australian population greater than two years old had access to the Internet via a home PC as of the fourth Quarter of 2000 (NOIE, 2000).

In trying to allow more people to have access to the Internet, NOIE assumed that people wanted to get online and would stay connected once they have access. NOIE research also found that by October 2001 they expected 69 percent of the Australian population to be Internet users. It was clear from this evidence that many Australians wanted to be connected. NOIE met its goal to assist Australians in utilising the Internet in their economy and community through the devise of a government policy for the Internet and all its possibilities (NOIE, 2000).

To allow more Australians the possibilities of the Internet, NOIE located many organizations and services to help provide Internet access to Australians. One of the services NOIE identified was the NetSpots Directory. At the time, NetSpots was a database composed of free and fee-based access locations, contact details, the locations hours of operation, services available and special accommodations offered (www.noie.gov.au/netspots). NOIE assumed that people wanted to be connected and once they were online they would continue using the Internet despite cost or poor websites. To minimize the costs that bar Australians from remaining online, a group called e-gaps started a program to raise the ability of the Australian public to access the Internet (http://egaps.vicnet.net.au/). The e-gaps group also

provided a searchable database of locations for public Internet access where the costs for access range from low to completely free. The e-gaps group also had a target of 114,000 access hours provided by June 30, 2003. The project started February 1, 2002 and users could track e-gaps' progress towards the goal on e-gaps' homepage if desired. Through these organizations and more, NOIE and the Australian community were working to get more Australians online to utilize the vast amount of services and information available to them.

Another barrier to access was that many people from other cultures feel more comfortable in their native language and often could not understand sites in foreign languages. NOIE identified one group who was working to solve this problem. The group was called Multicultural Australia. This group provided services including multilingual email, message boards, and chat rooms. The group made a website that allowed non-English speaking people to utilize the World Wide Web (www.mulitculturalaustralia.com.au). This website was targeted specifically at multilingual senior citizens of Australia and helped to promote Internet use by the elderly population as well as the multi-cultural population. By providing services in sixteen languages and a training program geared towards older citizens, Multicultural Australia increased the portion of the population able to access the Internet. Through all the services identified in 2001, Australians had the ability to be part of the Internet and its worldwide community.

Demographics of Online Australians

The planning of a website requires a designer to examine the demographics of the potential users carefully. Once the target group is identified, the product can be designed, keeping in mind the specific needs of the types of users. In the case of the Internet, the website can be formed to fit the users expected needs of information and education.

Australian Children Accessing the Internet

To construct a website oriented toward children, a few factors need to be known by the developers. These are age, gender, activities that attract children to websites, and the children's geographic location. Once the developers understand these factors, then they can design websites with appropriate aesthetics and content.

In The Current State of Play, NOIE noted that 47 percent of all Australian children under fourteen years old were accessing the Internet in the year 2000 (NOIE, 2000). In Australia, older children generally had more access to the Internet. Specifically, 22 percent of the five to eight year olds, 55 percent of the nine to eleven year olds and 72 percent of the twelve to fourteen year olds accessed the Internet in 2000. This information is shown in Figure 3.

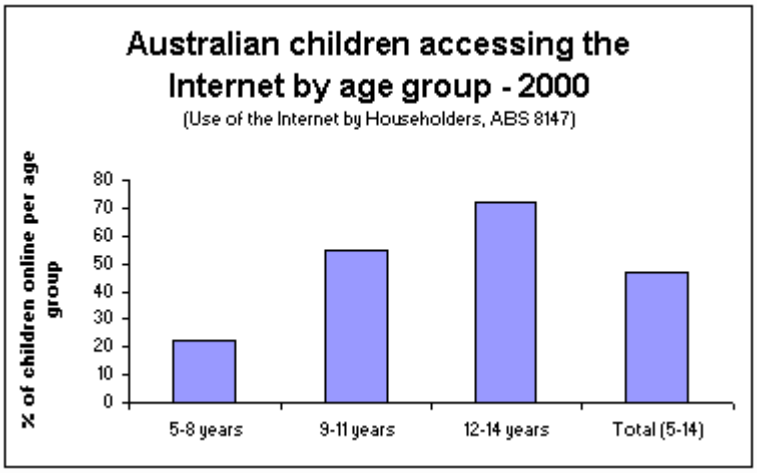

Figure 3. Australian Children Accessing the Internet by Age Group (NOIE, 2000)

Also, approximately the same percentages of boys and girls accessed the Internet. More precisely, 47 percent of boys and 46 percent of girls ages five to fourteen were using the Internet. This information is shown in Figure 4.

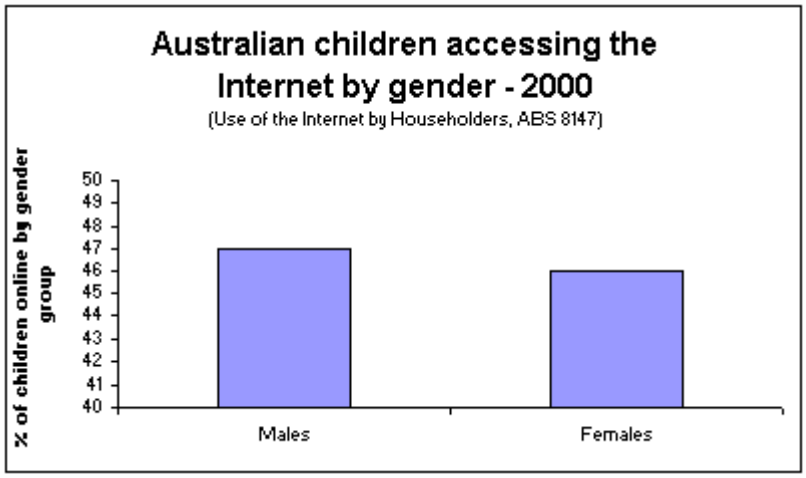

Figure 4. Australian Children Accessing the Internet by Gender (NOIE, 2000)

Other pertinent information for website development was that most of the children accessed the Internet from school or home. In particular, 31 percent of children had access at school, and 26 percent from home. Less than 10 percent accessed the Internet from someone else's home and less than 5 percent from the Public library. This information is shown in Figure 5.

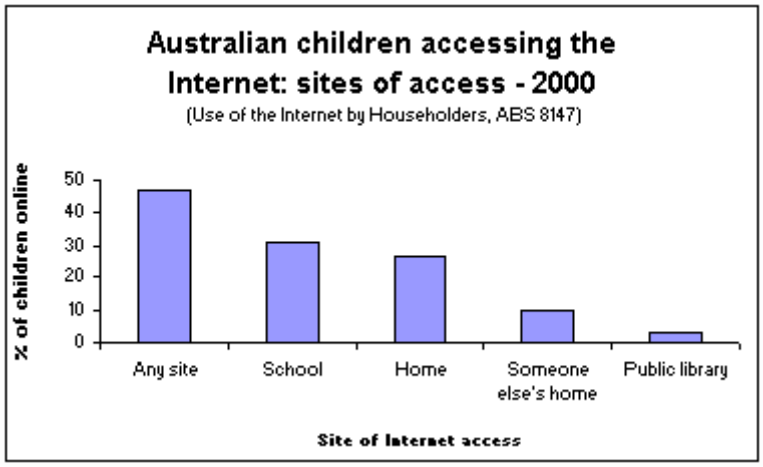

Figure 5. Australian Children Accessing the Internet Locations (NOIE, 2000)

While students were online, a majority of the children engaged in school or educational activities. Figure 6 shows that about half of the children had also browsed the web for leisure, used email, or chat rooms. A slightly smaller percentage used the Internet for playing games. Specifically, 83 percent of the children surveyed used the Internet to do

school or educational activities, 50 percent engaged in browsing for leisure, 50 percent for email or chat rooms, and 40 percent played games. This information is shown in Figure 6.

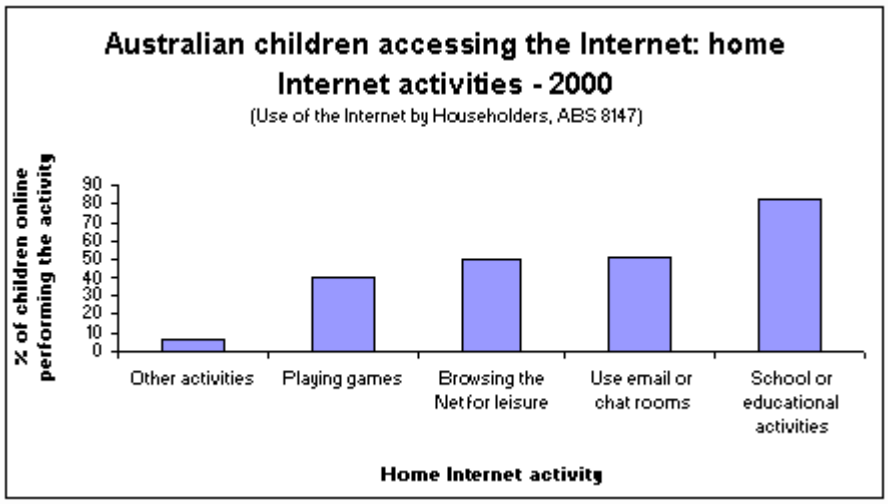

Figure 6. Australian Children Accessing the Internet by Activity (NOIE, 2000)

Australian Adults Accessing the Internet

Similar to making a website geared towards children, to make a website geared towards adults, the developer must also know a few demographic factors to start determining the target audience. The audience to be targeted is defined by their geographic location, age, gender, employment status, and family type. Once these factors are determined, appropriate layouts, aesthetic design, and content can be selected for a website geared towards the group. For further details on website design please reference the Website Design Section later in this proposal.

In Australia, the proportion of adults who accessed the Internet from any location was on the rise as shown in Figure 7. The percentage of adults who accessed the Internet grew from 32 percent in August 1998 to 50 percent in November 2000 (NOIE, 2000), that was a 56 percent increase over two years and three months. The most popular place for adults to access the Internet was from their home.

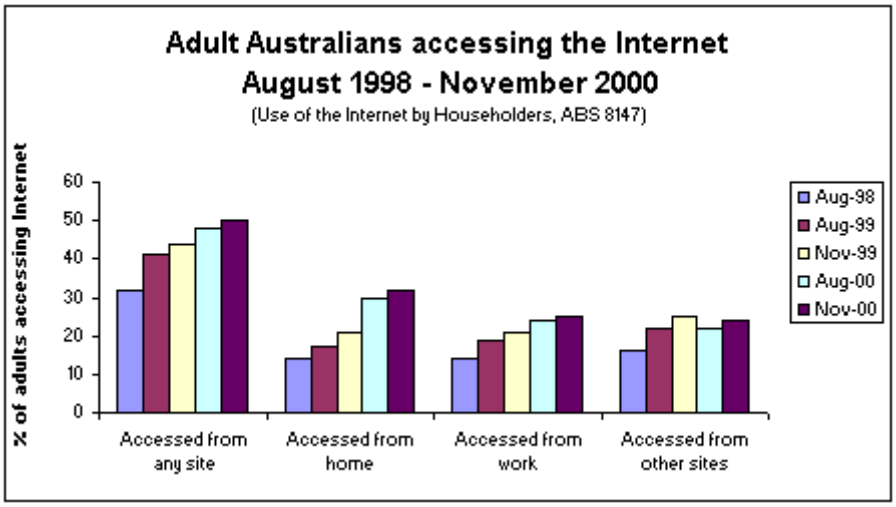

Figure 7. Australian Adults Accessing the Internet (NOIE, 2000)

Also, the percentage of adults who accessed the Internet in Metropolitan areas was not significantly greater than the percentage of adults who accessed the Internet in other areas. Specifically, 52 percent of people in Metropolitan areas in 2000 compared to 44 percent in other areas of Australia. This information is shown in Figure 8.

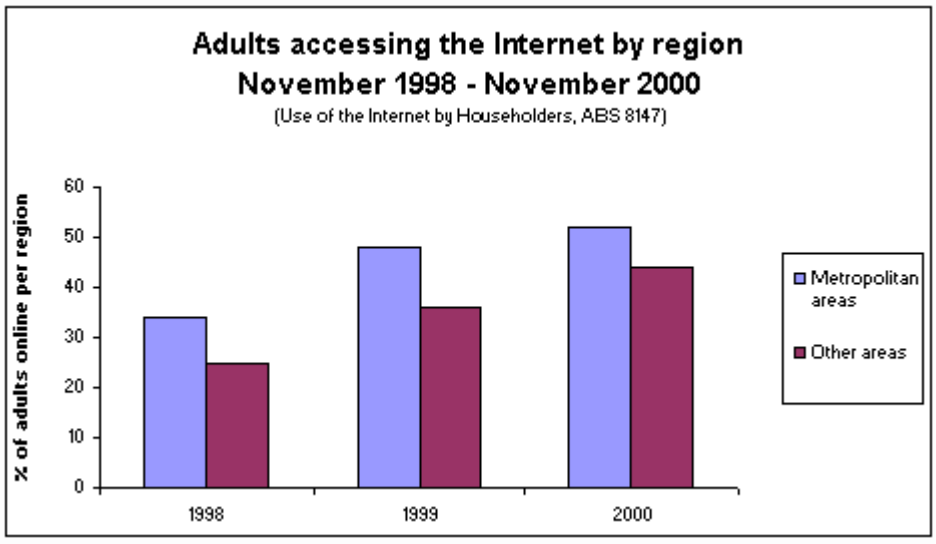

Figure 8. Australian Adults Accessing the Internet by Region (NOIE, 2000)

Divided by age group, the eighteen to twenty-four year old group had significantly larger percentages of Internet users in 2000; this was followed by the twenty-five to thirty-

nine year old group, then the forty to fifty-four year olds, and finally the fifty-five and over group. This information is shown in Figure 9.

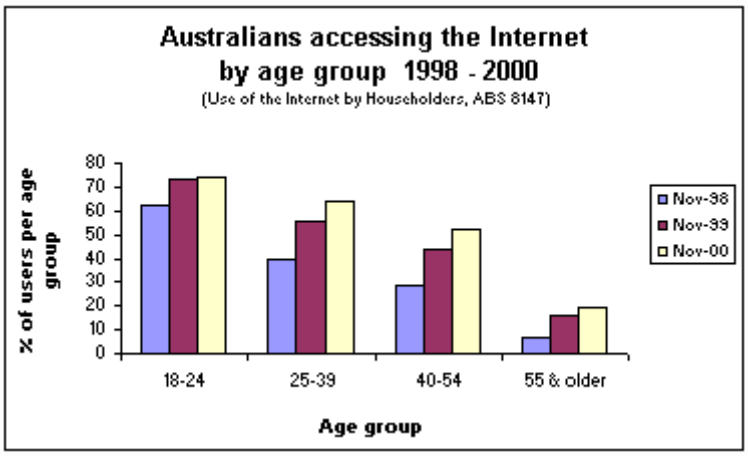

Figure 9. Australian Adults Accessing the Internet by Age Group (NOIE, 2000)

In addition to accessing the Internet at higher rates than other age groups, the ABS found that eighteen to twenty-four year olds displayed the most concern for the environment in a study conducted in 1999. This information is shown in Figure 10.

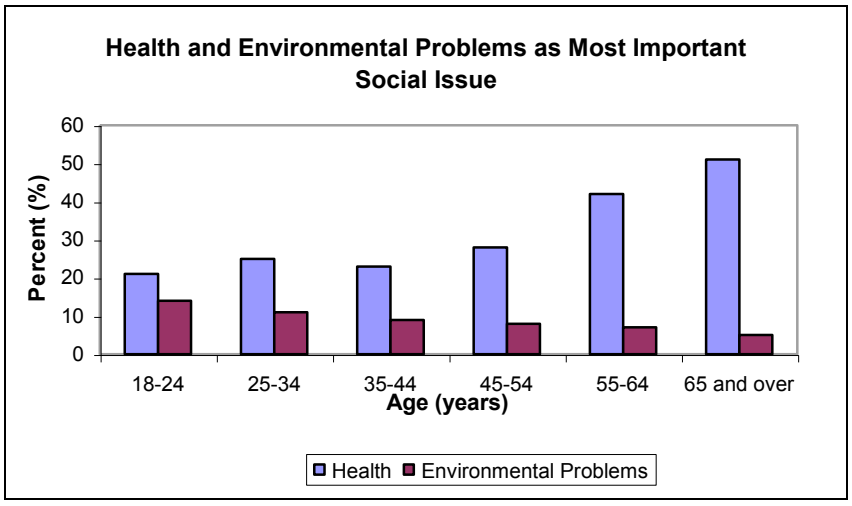

Figure 10. Health and Environmental Problems as Most Important Social Issue (ABS, 1999)

Unlike Australian children, the portion of female Australian adults who accessed the Internet was consistently lower than that of Australian males. In 2000, 53 percent of Australian males and 47 percent of Australian females were Internet users. This information is shown in Figure 11.

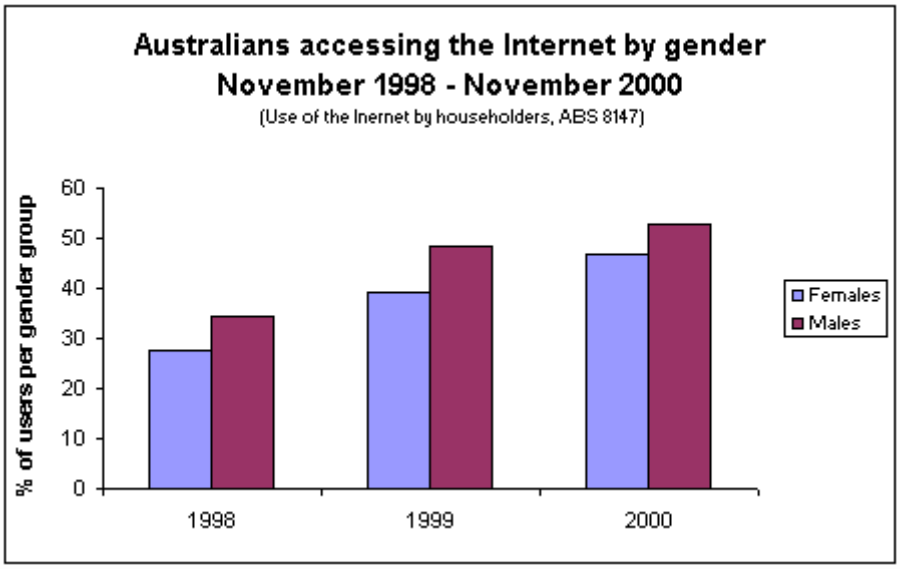

Figure 11. Australian Adults Accessing the Internet by Gender (NOIE, 2000)

The employment status of Australians on the Internet was a major factor to take into consideration in website design as a significantly larger portion of employed Australians accessed the Internet than unemployed Australians. Grouped by employment status, 63 percent of employed adults and 25 percent of unemployed adults accessed the Internet. This information is shown in Figure 12.

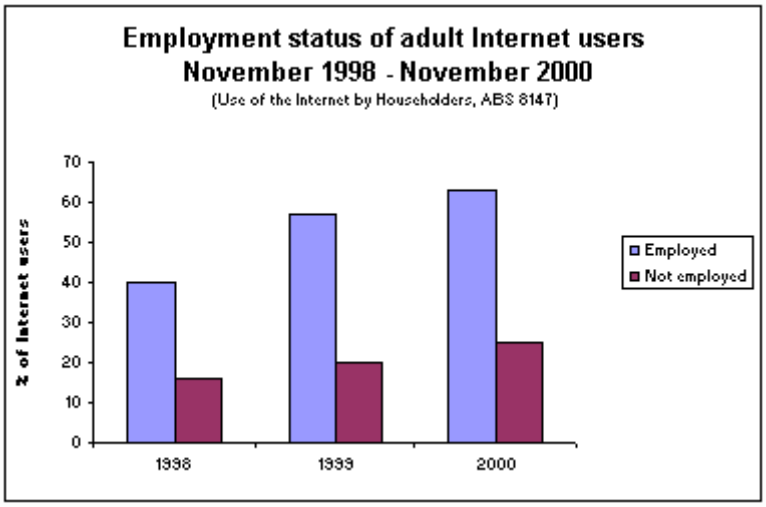

Figure 12. Australian Adults Accessing the Internet by Employment Status (NOIE, 2000)

Similar to the employment status factor, the income level was also a major consideration due to the fact that a much greater fraction of the Australian online community had an income level greater than or equal to fifty thousand Australian dollars. Specifically, in the year 2000, 57 percent of households with total incomes over fifty-thousand Australian dollars and 21 percent of households with total incomes zero Australian dollars to AU$49,999 accessed the Internet. This information is shown in Figure 13.

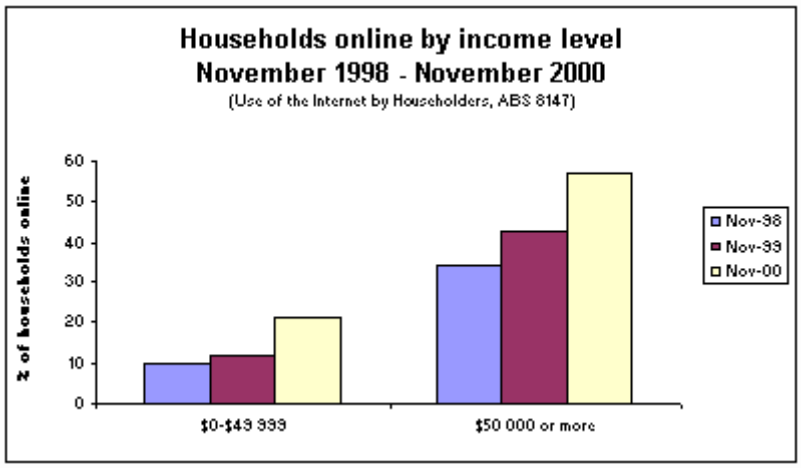

Figure 13. Australian Households Online by Income Level (NOIE, 2000)

Finally, in the year 2000, online Australians usually were couples. The proportion of online Australians with a single parent was much lower than that of families with couples as

head of the family. More precisely, it was found that 34 percent of couples with no children, 53 percent of couples with children, 27 percent of single parents with children, and 18 percent of single people were online. This information is shown in Figure 14.

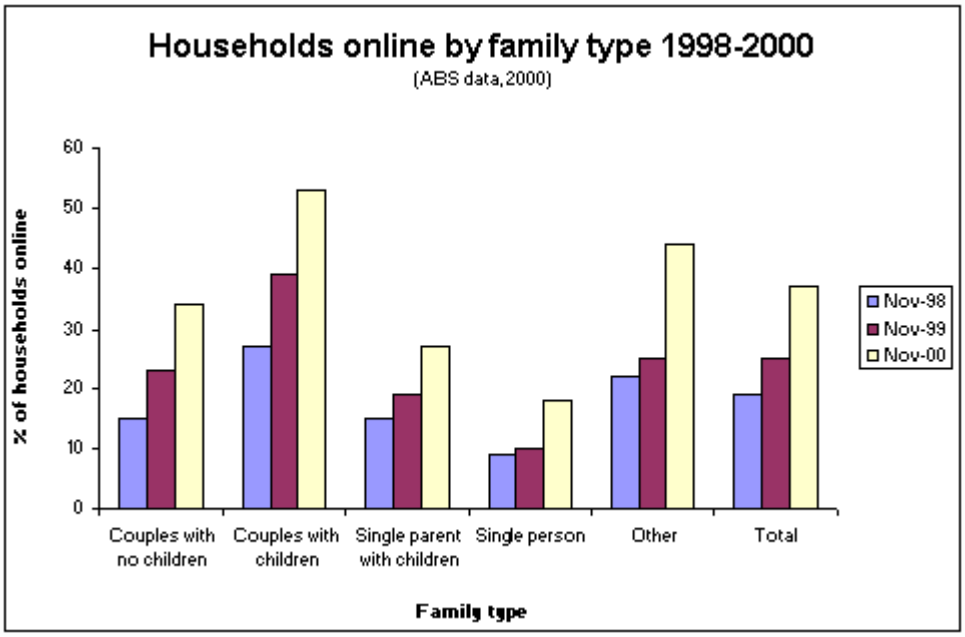

Figure 14. Australian Households Online by Family Type (NOIE, 2000)

All of these demographics combined give the designer a profile of the Australian online user and helped to define the target audience of the Zoos Victoria website. Specific demographics on adults and children helped define the different portions of the website designed for adults or children.

Effective Education on the Internet

The first factor in making the Internet an effective tool for educators is to prove to them that the Internet is a useful and worthwhile tool. To do this, educators must be well informed and successful using the Internet. If they understand the specific class's learning styles, how to use the technology, have access to it, and are willing to use it they will become better educators themselves and produce better students (Harrison & Wilson, 1997).

Once the educator understood the potential of the Internet, they next needed the skills to use the Internet successfully. Also, to keep classroom activities interesting, educators must

never stop continuous learning, and providing new stimuli to the classroom via new educational methods such as the Internet. Teachers need to be persistently continuing their education and professional development as well as updating their skills and refreshing ideas that may have been outdated (Harrison & Wilson, 1997). Like any new media, the Internet will improve teaching, but not by itself (Sarnow 1997). Media of any form always needs a person to choose the media, to determine when in the educational process to include the media, to decide what information to put in the media, and how to present the media to the students.

University Interactions with the Internet

Universities are responsible for producing the inventors of the Internet and the technical experts who will run it. However, whether or not universities fully utilised the Internet themselves remained to be seen. As of the fall of 1999, only 45.6 percent of all United States institutions of higher learning had on-line courses (Green, 1999).

Many of the universities that created online courses struggle with the implications that the new course structure can have on learning and the university experience. Similarly, the Zoological Parks and Gardens Board will have to deal with these implications if they choose to have an online course. The implications of this structure depend on whether the course is fully online or partially online. A partially online course uses the Internet as a supplement to the general lectures and laboratory exercises. With partially online courses, the Internet functions as another multimedia tool that the professors can use to explain ideas and theories to students clearly while still having the personal contact and feedback from the students in the course. In fully online courses, the students no longer have to be in a specific place or meet at a specific time (Wallhaus, 1999). This flexibility means that the student can choose what courses to take from specific institutions and makes it possible for the student to be

affiliated with numerous institutions at more than one location. The linking of databases that is needed for online courses caused the topic of Internet usage to surface yet again.

Along with the changed social setting of universities, fully online courses can change the role of educators or other faculty significantly. In a fully online course, educators are no longer focusing on lectures, but focusing on how to get the concepts across to a very broad range of students with different learning styles. This technique switches the focus of the programs from being credit based to being knowledge based. The shift in focus to having courses being knowledge based was a significant and important point because it accomplishes the goals of education. Therefore, whatever suits students best, whether it is fully online courses or typical offline courses should be used.

Special Education & Disabled Needs on the Internet

A consideration in evaluating education on the Internet should be how well special education and disabled students learn using the Internet. Even more of a challenge is to consider teachers with special education or disabilities and their needs on the Internet. These students and teachers are functioning members of society and many are in prominent positions in society as Jones noted (1997). They need to have services available to them that allow them to continue in these roles as government and ethical standards dictate. Some might have argued that very few people had problems with websites if they possessed proper translating equipment. However, many of the problems were not with the translation, but with the website itself. As Walker remarked, websites made in the United States are 50 percent more difficult for foreigners to understand than United States natives (2000). He also noted that it was three times harder for visually impaired people to understand websites than for users who were not visually challenged (2000). Clearly, the lack of user friendly Internet services can be an annoyance to a majority of the population; however, these poorly designed and implemented online resources were useful to some people.

Website design standards

To make a website successful, a thorough analysis of current design standards and evaluation techniques must be conducted. This will acknowledge who has previously written about website design, and whether this information is pertinent to the creation of an effective educational website. At the present time, there is a wide discrepancy among web analysts and Information Technology professionals on appropriate techniques used in website design. This is due to the Internet being a new forum of communication, which is constantly being redefined by new technology. An example of this noticeable discrepancy was the abundance of "top-ten web design mistake" lists. Of thirteen such lists found and compared, only three had similar items and themes. Several lists concentrated on specific design elements such as the use of frames and graphics (http:// www.useit.com/alertbox /990502.html, http://www.doghause.com/top15.html, http://www.tongueflicks.com/fail.htm), while others discussed theoretical concepts such as advertisement techniques, and the role a website should play in a business (http://www. topfloor.com/pr/freeinfo/top10.htm, http://www.makingmoneyfromhome.com/success.htm). These lists frequently contradicted each other.

There was a recent emphasis on standardizing web design through handbooks and official references, such as the Web Style Guide (http://info.med.yale.edu/caim/manual) produced by the Yale Centre for Advanced Instructional Media, and the Stanford WWW pages (http://www.stanford.edu/group/webdev /standards.html). Yet, these design guides were broad, and relied on individual web designers to interpret and apply the concepts discussed. In addition, these style guides have had little opportunity to gain acceptance from the development community due to the Internet's relatively brief existence (Ohnemus, 1997).

These lists, although often not in agreement with one another, all discussed the issue of usability. Usability is generally refers to the ease finding and understanding the

information displayed by a website (Keevil, 1996). Proper usability is essential to a website's success, and should preclude tool mastery (Calongne, 2001). Design of a useable web page requires an understanding of the audience, category, content, usability goals, and a quantitative measure of these goals (Ohnemus 1997). Furthermore, the usability of a website depends on what people are trying to accomplish, and who is using the product (Spool, 1999). Whatever the goal, the purveyance of information was a central theme (Palfreyman, 1996). Several usability tests were developed and tested on a variety of websites, and are discussed in the content section.

Audience

For effective website development, a target population must be identified, and key questions must be answered about the nature of this audience (Calongne, 2001). According to Champeon (1999), answers to these questions help the developer in choosing colours, styles, multimedia components, and the degree of user control. He also stated that the target population must further be broken down into user classes, defined by psychological characteristics, as well as the knowledge and general experience. The Yale Style Manual partitioned users into four categories: web surfers, novice and occasional users, expert and frequent users, and international users (The Yale Style Manual, 1997). According to the Manual, a well designed website must accommodate a range of skills. Determining the main audience of the Zoos Victoria website was a fundamental part of this project.

Content

Detailed information concerning the content of a website must be obtained before finalizing the proposed layout. Content includes not only the website subject, but also the strategies employed to make important navigation tasks user friendly, such as the retrieval of information (Laurel 1990). Cooper (1990) presented a series of questions that needed to be answered regarding content, including:

- What are the mental models common to the target audience?
- What information needs to be included?
- How should this organization be organized?
- How will the user navigate the website?

Appropriate content recommendations and design were an essential part to the Zoos Victoria website and were investigated thoroughly.

Testing Usability

Calongne (2001) found that testing of website usability was crucial to assessment of a usable design. She also presented a series of design practices for evaluating a website's effectiveness. Please see Appendix C for a complete list of these practices. Neilsen (1994) and Keevil (1996) also presented extensive lists for testing all aspects of website usability. Testing was accomplished through a variety of techniques and specific tactics varied depending on the website's mission. Often, quantifiable goals were used to measure the website's usability (Hix, 1993). Examples of these goals included page load time, navigation issues, and the ease at which people find desired information (Calongne 2001). Most contemporary usability references were discussed in non-specific terms; there was no information available regarding usability testing of education-based sites. One of our goals was to establish recommendations for this task.

The Four Zoos Philosophy

The vision of the Zoological Parks and Gardens Board (ZPGB) is to "build enduring relationships between people and wildlife for a future in which humans live in balance with the natural world" (ZPGB Annual Report, 2001). This vision, officially called the "New Zoos", incorporates on site, off site, and online environmental education and conservation; it aims at creating zoos without boundaries. The New Zoo philosophy requires commitment, competence, and capital. The ZPGB has continuously displayed commitment to the aforementioned goals and competence toward these goals from both internal resources and external networks. The ZPGB utilizes partnerships to extend into community, government, and business to increase capital and competence.

The implementation of the New Zoos depends on the cooperation between the Royal Melbourne Zoo, Healesville Sanctuary, Victoria's Open Range Zoo at Werribee, and the further development of online resources. The Royal Melbourne Zoo displays a wide array flora and fauna typically found at a metropolitan zoo. It is unique in its display of 350 animal species in bioclimatic zones as well as its spectacular gardens. The Healesville Sanctuary focuses on south-eastern Australian wildlife and was the first organization to breed platypuses in captivity. Victoria's Open Range Zoo at Werribee (VORZ) concentrates on Asian, African, North American, and Australian grassland animals. In addition to the three physical properties, the ZPGB has designated the website as the fourth zoo. This fourth zoo will serve as an educational resource not only for regional Victoria, but also the online community worldwide.

Methodologies

Various methods of data collection such as interviews, written questionnaires, and observation were employed in this project. First, we analysed website usage information provided by the Information Technology Department of Zoos Victoria. We noted the most frequently visited websites, the visitor's country of origin, and the number of visitors from March 2001 to March 2002. This gave us a better idea of the most popular sections of the Zoos Victoria website and helped guide our subsequent query formation of the interviews and written questionnaire.

We then conducted a review of existing zoological parks and aquarium websites from North American, Australasian, and European associations. Our team developed a usability test by adapting several existing tests from reputable sources found in our research. Our test was a synthesis of usability tests developed by Calongne (2001), Keevil (1998), and the Urban Development Website Evaluation Team (2001). Each author or group is recognized as a leader in computer and website usability and is widely published in this area of research. We analysed each question based on our Internet experience and determined its relevance to our project. Appropriate questions were then compiled into a usability test. Please see Appendix D for the usability test. Concurrently, we gathered a list of 260 zoological parks and aquarium websites from the American Zoological Associations (AZA), the Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA), and the European Association of Zoos and Aquaria (EAZA). Using this list, we randomly selected ten websites to review. Ten websites was an ample sample size because of the highly comparable nature of each website. Consequently, we did not have to account for a wide diversity of responses since each website served the same specific role. Furthermore, we observed redundancies in most sites, making a large sample unnecessary. After testing the websites we compared the

results of the usability tests based on a systematic point scheme associated with each question or task. The compiled data was subsequently used for the basis of our recommendations.

After we completed the website review, we interviewed three primary school teachers and three secondary school teachers. Contact information for teachers in schools that are in close proximity to the Melbourne Zoo was obtained from Zoos Victoria records. We gathered information pertaining to children's Internet use and interests, Internet access within the school, and professional development for the teachers. The interview schedule was semi-standardised and we pre-tested the questions on one school teacher from the designated sample population. Using a core set of questions we interviewed school teachers concerning the Zoos Victoria website. In addition, information regarding the educational use of the website was obtained. Please see Appendix E for a complete list of interview questions.

To obtain the Friend of the Zoos (FOTZ) opinions we used reference sampling to interview five FOTZ members who volunteer on a regular basis. FOTZ President Ray Wilton provided interview candidates. We used reference sampling because some FOTZ members prefer not to be contacted and others perform volunteer roles not pertinent to our project aims. Due to the fact that FOTZ is an independent organization and their membership list is closed to public access, we were unable to contact general members. General members are those who donate money to the organization, while volunteers donate time and money. Since the FOTZ membership consists of two demographic groups and we were only able to interview the volunteers, our results reflected the opinions of volunteers and were not representative of the larger membership.

We determined that only five FOTZ members should be interviewed. Despite the important role of FOTZ in daily operations, we chose a small sample size because FOTZ is an independent organisation with a restricted ability to influence Zoos Victoria policy. Our sample was composed of high ranking FOTZ officials who are comfortable speaking on

behalf of the organisation. We pre-tested the interview questions on FOTZ President Ray Wilton. He was chosen based on his knowledge of FOTZ composition and his willingness to help. Interviews were conducted using a semi-standardised interview of core questions regarding the website and a second set of questions about a FOTZ-specific web page. Please see Appendix F for a complete list of interview questions. We used the results of these interviews to make recommendations about the FOTZ, volunteer, and donor portions of the website.

During the period in which interviews were being completed, the staff of the Melbourne Zoo, Healesville Sanctuary, and Victoria Open Range Zoo were asked to complete a staff questionnaire. Please see Appendix G for a copy of the questionnaire. This survey was constructed by our team and consisted of open answers as well as multiple-choice questions regarding use of the Zoos Victoria website and an internal staff webpage. The questionnaire was pre-tested on a sample of ten Melbourne Zoo staff from varying departments. We used a standardized set of questions, which was administered to approximately two hundred of the 315 Zoos Victoria staff. We used the results of the questionnaire to gauge the opinions of various staff that were too numerous to interview individually given the time constraints.

Our next task was to survey the Melbourne Zoo visitors. We first estimated the total population size using ticket sales and turnstile counts. After we knew the approximate size of the population, we determined the appropriate sample size using sample size tables from Salant and Dillman (1994). The confidence level was determined based on practical limitations of the resources available to be 95 percent with a +/- 10 percent error. It was impossible to find a list from which to draw a sample, so we used purposive systematic sampling methods based on a specific time period. In order to accomplish this task, we decided that every ten minutes, the adult visitor who was purchasing a ticket would be the

person surveyed. Surveys were administered for two hours per morning throughout a five day work week. Please see Appendix H for a copy of the visitor survey. Visitors above the age of sixteen were designated as adult Zoo visitors in accordance with Zoos Victoria admission policy. We were able to differentiate adults from children by observing what admission pass was purchased. We pre-tested the survey questions on 5 percent of our sample size prior to survey execution.

Adults entering the Zoo were easier to survey because entrance patterns were more staggered in comparison to exit patterns. Consequently, the nature of our questions was geared towards what attracts people to the Melbourne Zoo rather than what they actually enjoyed. There are two entrance points; we surveyed at both points for five consecutive weekdays, with two of us at the main entrance and the other at the secondary entrance point. Please see Appendix I for a Melbourne Zoo map designating our survey points. We chose a five-day survey period because it allowed us to collect a sample number that was statistically viable. Furthermore, this allowed a representative population size for each weekday. We realize that weekends are not included in this design; however, we feel that weekend crowds would have superseded our ability to systematically survey, due to the large number of Zoo visitors. Since we surveyed during school holidays, we felt that no part of the population would be missed because the weekday crowds were a smaller representation of the normal weekend visitors.

To evaluate the data collected from the usability test, we used Microsoft Excel to compare the results of team members. We also listed subjective comments regarding the success and failure of each website. SPSS software was used to analyse the multiple-choice results for the staff questionnaire and visitor survey. Lastly, the open-ended questions and interviews were examined using theme-based content analysis. We did not generate a list of designated themes prior to interviews due to a lack of knowledge concerning the

interviewees' experience. However, after all interviews were complete general themes were extracted and compared.

After all interviewing and observing processes had taken place, we reviewed the results and created a set of recommendations for an effective Zoos Victoria website. After Zoos Victoria has developed a website, it will need a tool for evaluating whether or not it has created an effective and educational website. To test its website, we have expanded our original usability test to include interview, staff questionnaire and visitor survey findings. All of our results were presented in both oral and written form.

Results and Discussion

The results presented in the following sections are a culmination of data collected. We will begin with the introduction of results from our visitor survey since the visitors compose a large portion of the website users. Next we will move on to the data from staff questionnaire because the staff utilises the website on a regular basis. Then we will discuss the themes that emerged from the teacher interviews as they use the website for educational purposes. We will then continue on to the themes collected from the Friends of the Zoos (FOTZ) interviews given that they can use the website for many different purposes. Lastly, we will present the results of a usability test to benchmark other zoological parks and aquaria websites against the Zoos Victoria website.

Visitor Survey

Our team conducted a survey of Melbourne Zoo visitors each day from Monday, April 8, 2002 to Friday, April 12, 2002. This week was chosen because it was a school holiday week and we believed the visitor population would more accurately reflect both weekend as well as weekday visitors. Melbourne Zoo admission reports for the week of April 8, 2002 to April 12, 2002 confirmed our conjecture, making weekend surveying unnecessary. Our team approached 180 adult Zoo visitors and surveyed 156 visitors, for a response rate of 86.7 percent. We easily exceeded our minimum sample size of sixty one visitors as described in Salant and Dillman (1994) and our target size of one hundred visitors. These 156 men and women represented 2.1 percent of the 7350 adult visitors for these five days. Please see the methodology and Appendix B for a full description of our team's surveying method and sampling procedure. Please see Appendix H for a copy of the administered visitor survey.

Participant Demographics

The visitor sample consisted of 103 women and 53 men, as viewed in Figure 15:

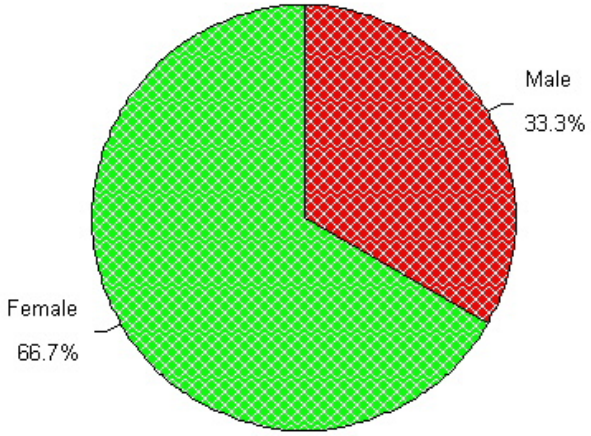

Figure 15. Participant Demographics (n=156)

Seventy percent (109) of survey participants cited bringing children as their primary reason for visiting the Melbourne Zoo. The remainder of people cited personal enjoyment (45) or other (15). Participants were allowed to choose all categories that applied, which is why there are more responses than there are participants. Please see Figure 16 for this information.

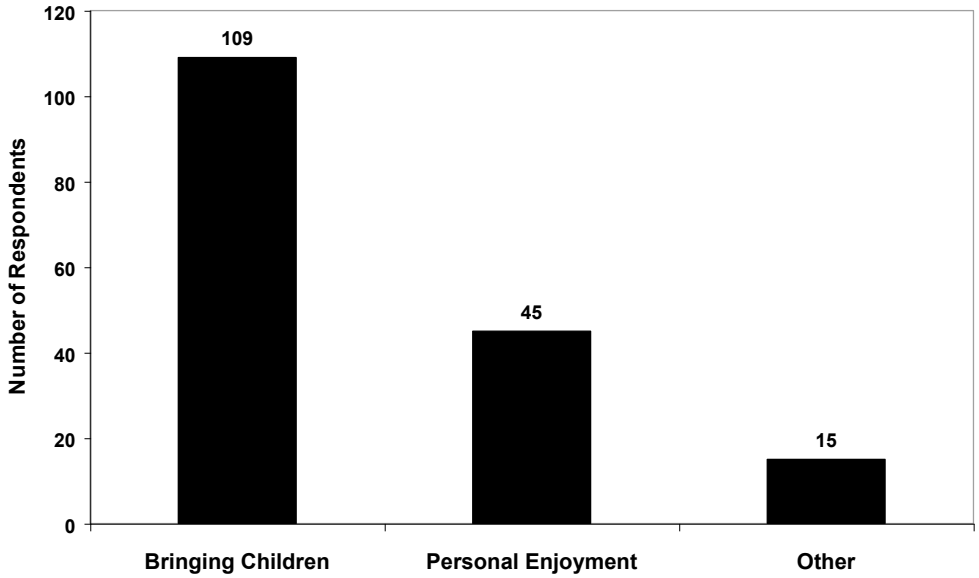

Figure 16. Participant's Reason(s) for Visiting the Melbourne Zoo (n=156)

The typical survey participant was a woman bringing children with her to the zoo. This fact will undoubtedly affect our recommendations, as it will be difficult or impractical to generalize Australian attitudes towards websites with information drawn from a specialised

population sector. However, Melbourne Zoo visitor statistics have consistently shown a higher percentage of women with children than other visitor demographic groups. Therefore, we feel confident that survey results will reflect general visitor sentiments.

Participant Internet Access

Our team used survey question two as a filter. If the visitor had Internet access at home or work the survey continued; the survey ended if the visitor had no access. Sixty nine percent (107) of survey participants had access to the Internet, as viewed in Figure 17.

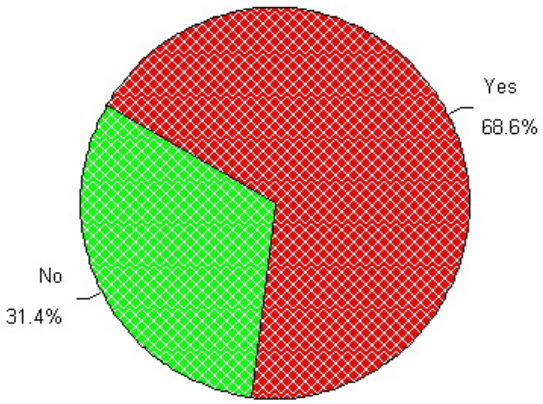

Figure 17. Percentage of Visitors who have Internet Access (n=156)

This percentage of Internet access among adult Australians fully agrees with statistics published by NOIE that predict 69 percent of the Australian population having Internet access by October of 2001. Adult males and females displayed nearly identical access rates, as viewed in Table 2.

Table 2. Internet Access Frequency by Gender

Gender	Response	Frequency	Percent
Female	Yes	71	68.3 %
	No	32	31.7 %
Male	Yes	37	69.8 %
	No	16	30.2 %

Participants' use of Zoos Victoria website

It was found that only eighteen (11.5 percent) of 156 participants had viewed the Zoos Victoria website, as seen in Figure 18.

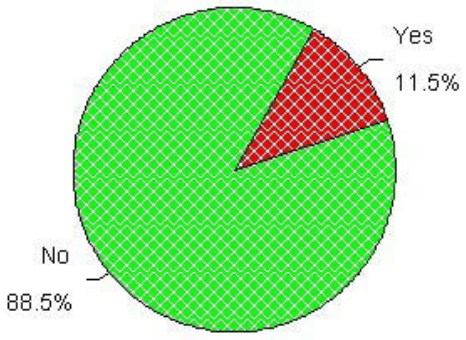

Figure 18. Percentage of Visitors who Have Viewed the Zoos Victoria Website (n=107)

Similar to Internet access percentages, there was no major difference in Zoos Victoria website visitation based on gender. This slight difference is viewed in Table 3.

Table 3. Zoos Victoria Website Visitation Frequency by Gender

Gender	Response	Frequency	Percent
Female	Yes	11	15.5 %
	No	60	84.5 %
Male	Yes	7	18.9 %
	No	30	81.1 %

There are several feasible explanations for this extremely low percentage. First, the participants may be Melbourne residents who are familiar with the Zoo's operating hours, admission prices, and directions and therefore had no need to request this information online. Another possible explanation is that the sample is not truly representative of the zoo visitor population. Finally, it is also reasonable to believe that people either did not remember visiting the website or they were not entirely truthful during the survey. The cause of this

low visitation percentage can only be speculated, however, they are indicative of poor advertisement and will be a major focus of our team's recommendations.

Zoos Victoria Website

Some zoo visitors had visited the website, and could answer questions regarding their rationale for visiting the site. It is not statistically viable to analyse the results of the questions pertaining to the current Zoos Victoria website due to the small sample size (n = 18). Despite this, one pertinent fact can be drawn, that is that fourteen of the eighteen respondents who had seen the website had looked for directions and admission information. Therefore direction and admission information is very important to website visitors and should be regarded as important in the design of the site.

Participant's Willingness to Use Specific Online Functions

A series of questions were used to gauge the participant's willingness to divulge sensitive or personal information over the Internet. We received mixed results that were heavily dependent on the wording and nature of the question. Therefore, it is difficult to derive any general trends from the survey results. However, men generally answered more positively than women, which may indicate a higher confidence level towards conveyance of secure information via the Internet.

Participants tended to respond positively when there was no mention of a credit card even if a credit card was required to complete the task. These tasks include electronically donating money and purchasing advance electronic admission tickets. These positive results suggest that the participants did not associate these tasks with the divulgence of personal information and subsequently cannot be used as evidence to support an online donation or e-ticket form. Figures 19 and 20 depict people's willingness to donate money and purchase electronic tickets.

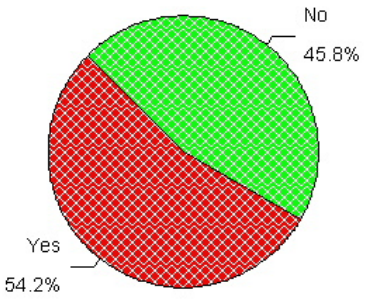

Figure 19. Willingness to Donate Money Online (n=107)

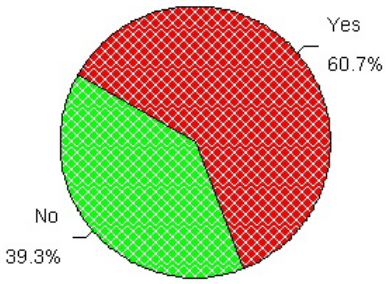

Figure 20. Willingness to Purchase E-Ticket (n=107)

As previously stated, men felt much more comfortable with these tasks in comparison to women. This fact is displayed in Table 4 and Table 5.

Table 4. Willingness to Donate Money Online Frequency by Gender

Gender	Response	Frequency	Percent
Female	Yes	34	48.6 %
	No	36	51.4 %
Male	Yes	24	64.9 %
	No	13	35.1 %

Table 5. Willingness to Purchase E-Tickets Frequency by Gender

Gender	Response	Frequency	Percent
Female	Yes	38	54.3 %
	No	32	45.7 %
Male	Yes	27	73.0 %
	No	10	27.0 %

Those questions that did mention credit card or personal information experienced a higher negative response rate. Forty three percent of respondents were willing to purchase an item online with a credit card, while 44 percent would use personal information to log on to a members only website. These trends are depicted in Figures 21 and 22.

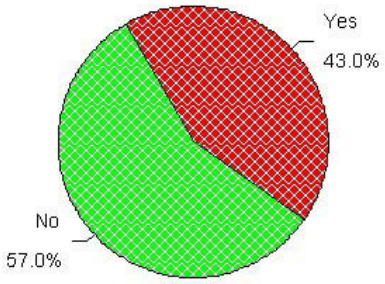

Figure 21. Willingness to Purchase an Item Online with a Credit Card (n=107)

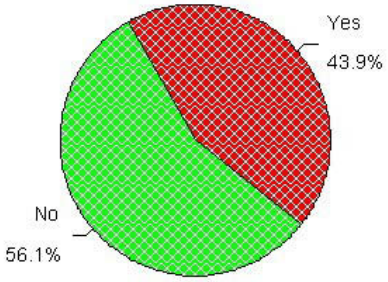

Figure 22. Willingness to Log onto a Members Only Site using Personal Information (n=107)

Once again, men answered "yes" to these two questions at a significantly higher percentage than women. Frequencies and percentages are provided in Tables 6 and 7.

Table 6. Willingness to Purchase an Item Online with a Credit Card Frequency by Gender (n=107)

Gender	Response	Frequency	Percent
Female	Yes	27	38.6 %
	No	43	61.4 %
Male	Yes	19	51.4 %
	No	18	48.6 %

Table 7. Willingness to Log onto a Members Only Site using Personal Information Frequency by Gender (n=107)

Gender	Response	Frequency	Percent
Female	Yes	28	40.0 %
	No	42	60.0 %
Male	Yes	19	51.4 %
	No	18	48.6 %

Finally, we inquired whether participants would feel comfortable in completing an online survey. One of our goals was to develop an online website evaluation to be implemented once website updates occur so this question was of particular importance. Seventy three percent of respondents answered "yes" to this question, suggesting that an online survey would be an effective means of evaluation for the Zoos Victoria website. Figure 23 depicts this trend.

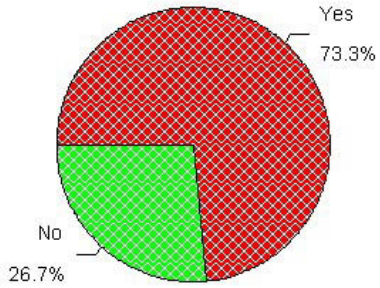

Figure 23. Percentage of Visitors who are Willing to Complete an Online Survey (n=107)

Both male and female respondents had similar response distribution as show in Table 8.

Table 8. Percentage of Visitors who are Willing to Complete an Online Survey Frequency by Gender (n=107)

Gender	Response	Frequency	Percent
Female	Yes	52	73.5 %
	No	18	26.5 %
Male	Yes	27	73.0 %
	No	10	27.0 %

Website Aspects

Participants were given a list of twelve website aspects and asked to select the most important and least important attributes. The respondent could choose any attribute that applied to each category. Three of the four most important aspects of a website dealt with website content. These attributes were a children's' section (56), upcoming events (52), and animal and plant educational material (40). The fourth most important aspect was navigation (50). Please see Figure 24 for visual depiction of the most important website aspects.

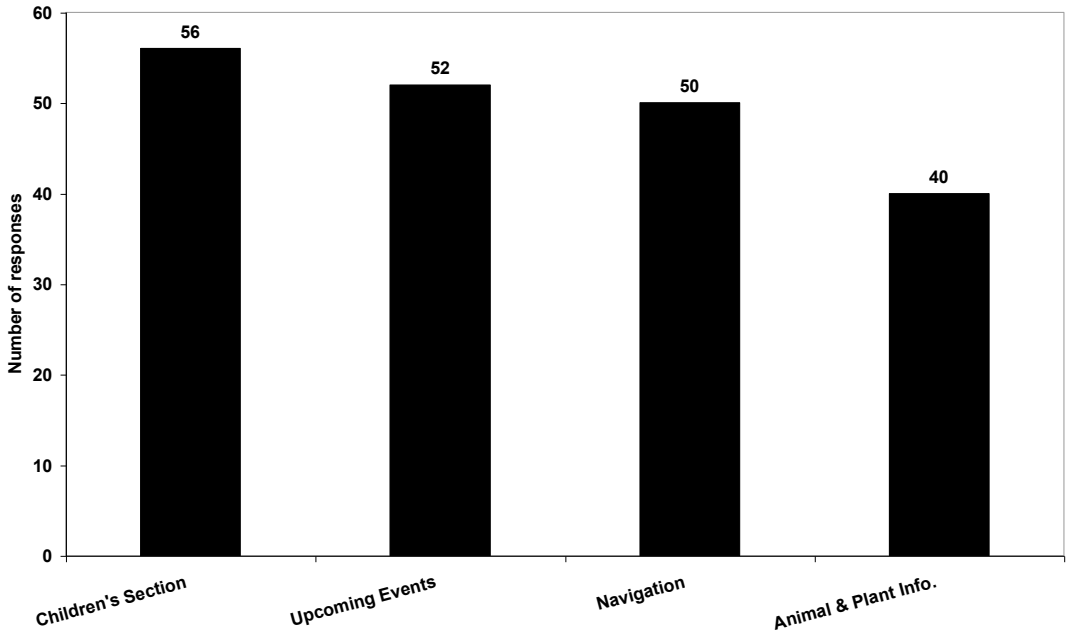

Figure 24. Top Four Most Important Aspects of a Website (n=107)

A children's section was voted the most important aspect; this directly reflects participant demographics. The survey was primarily administered to mothers and fathers with their children present, undoubtedly influencing their decision, as shown in the Participant Demographics section previously. This fact may also account for the high percentage of people choosing animal and plant information as an important aspect. A secondary reason for the high occurrence of this choice is that the survey was completed in the Melbourne Zoo, so people were already thinking about animals. Despite these inherent biases, these findings are significant and will play an important role in our recommendations.

Survey participants were also asked to choose the least important attributes that are displayed in Figure 25.

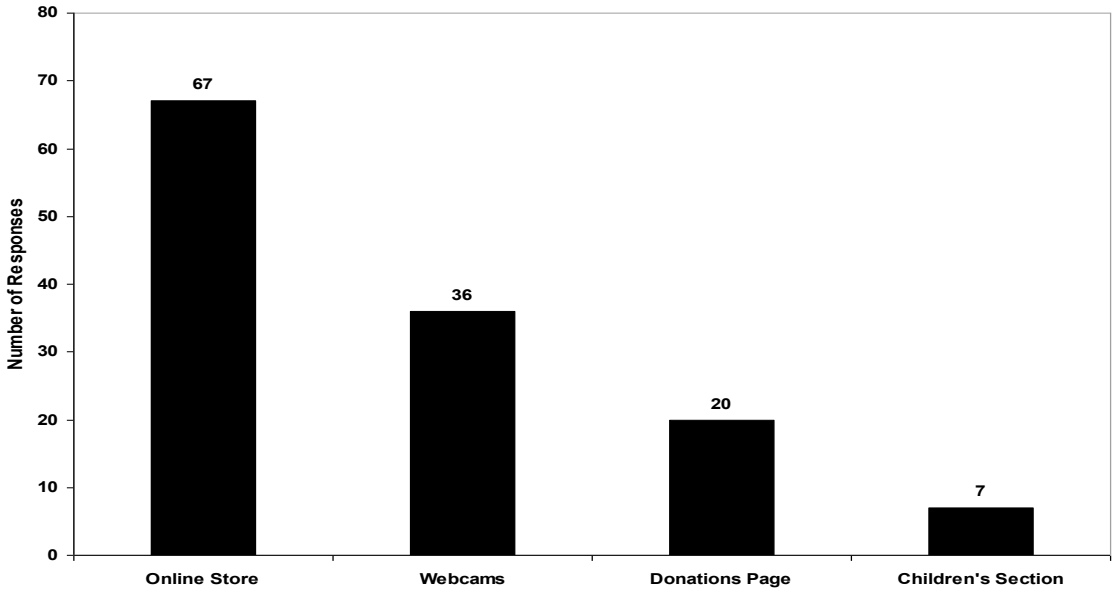

Figure 25. Least Important Aspects of a Website (n=107)

Visitors overwhelmingly felt that an online store was the least important attribute of a website (67), followed by webcams (36), donations page (20), and a children's section (7). The unpopularity of an online store, coupled with people's hesitancy towards using a credit card or divulging personal information online suggests that a retail sector of a website is not needed. This trend is also reflected in the unpopularity of an automated donation page. Our team was surprised to see webcams as the second least important website attribute even though they are heavily visited on the Zoos Victoria website. Based on a website visitor tracking, webcams are one of the top ten pages visited consistently. This discrepancy may be due to slow connection speeds or low resolution audio and video feeds that webcams currently experience. Another possibility is that those surveyed are not inclined to visit Melbourne Zoo webcams since they live within visiting distance to the physical property. Even though the question did not exclusively pertain to Melbourne Zoo webcams, participants may have misinterpreted the question and answered it in regard to the Zoos Victoria website. It is obvious from Melbourne Zoo website tracking records that people view webcams, but survey results suggest that they attract a specific section of the population and are not a concern or useful feature to adults with children.

Staff Questionnaire

Our team developed and administered a questionnaire to staff over a two-week period. Staff members from each property were purposively selected according to their position or experience with the Zoos Victoria website. Our team distributed 129 questionnaires and received 45 back for a response rate of 34.9 percent. This response rate agrees with those experienced in previous surveys conducted by both Zoo officials and consulting companies. Please see the methodology and Appendix B for a full description of our team's surveying method and sampling procedure. Please see Appendix G for a copy of the administered staff questionnaire.

Staff's Website Use

Figure 26 displays the staff's use of the Zoos Victoria website. Staff use is split between two user groups: weekly and daily users, which will be subsequently referred as frequent users, and occasional users. Only 6.7 percent of staff members had not viewed the Zoos Victoria website, so our team decided this demographic group was not large to produce statistically viable results.

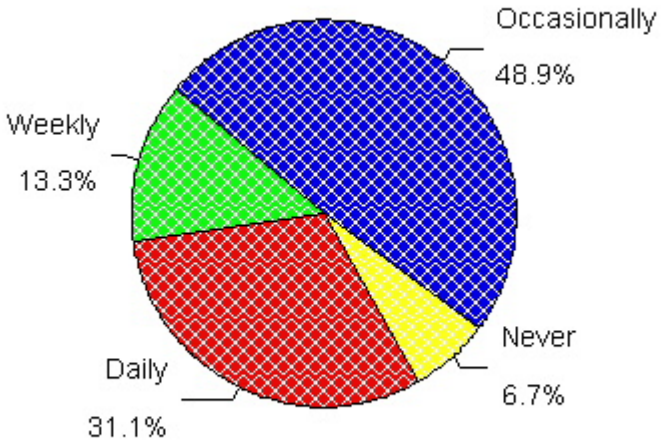

Figure 26. Staff Use of Zoos Victoria Website

Navigation Ease of Website for Staff

Once our team established two staff user groups, we were interested to determine how these groups felt about navigation on the Zoos Victoria website. Figure 27 displays the frequent users' feelings towards website navigation, while Figure 28 displays the occasional users' sentiments.

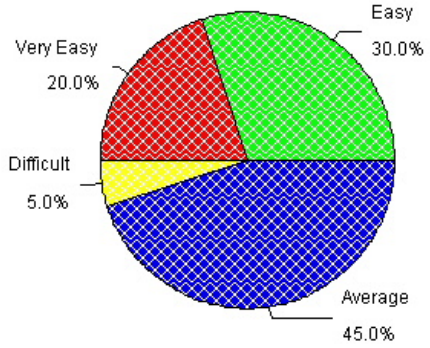

Figure 27. Frequent User's Rate of Navigation on Zoos Victoria Website (n=20)

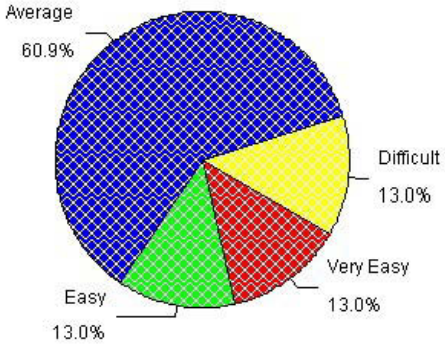

Figure 28. Occasional User's Rate of Navigation on Zoos Victoria Website (n=25)

These figures clearly show that the frequent users of the website rated the navigation easy to very easy significantly more often than the occasional users. This suggests that the Zoos Victoria website has a definite learning curve that needs to be addressed. According to the Yale Manual of Style, optimally designed websites cater to both inexperienced and experienced users in an engaging fashion. Since 60.9 percent of occasional users referred to navigation as average, we believe navigation is an issue that must be addressed in our recommendations.

The issue of navigation became even more apparent when our team analysed the results of the question that asked staff to choose what they disliked about the structure of the

website. As viewed in Figure 29, navigation was the most frequent answer followed by layout and color, interactivity, and font style and size.

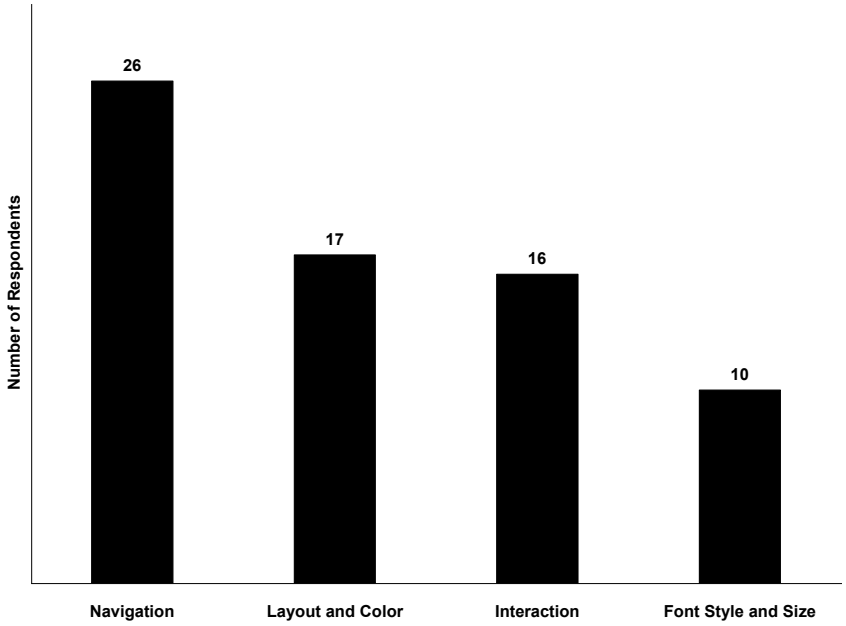

Figure 29. Attributes Staff Dislike about the Structure of the Zoos Victoria Website

Our team believes that if staff who use the website on a regular basis find navigation poorly designed then occasional visitors will experience even more difficulty. Furthermore, layout and color and font style and size were also chosen as problematic and will be discussed in our recommendations.

Staff chose the integration of the three properties into one website as the attribute most liked about the structure of the Zoos Victoria website, followed by the animal search function. These results are graphically displayed in Figure 30.

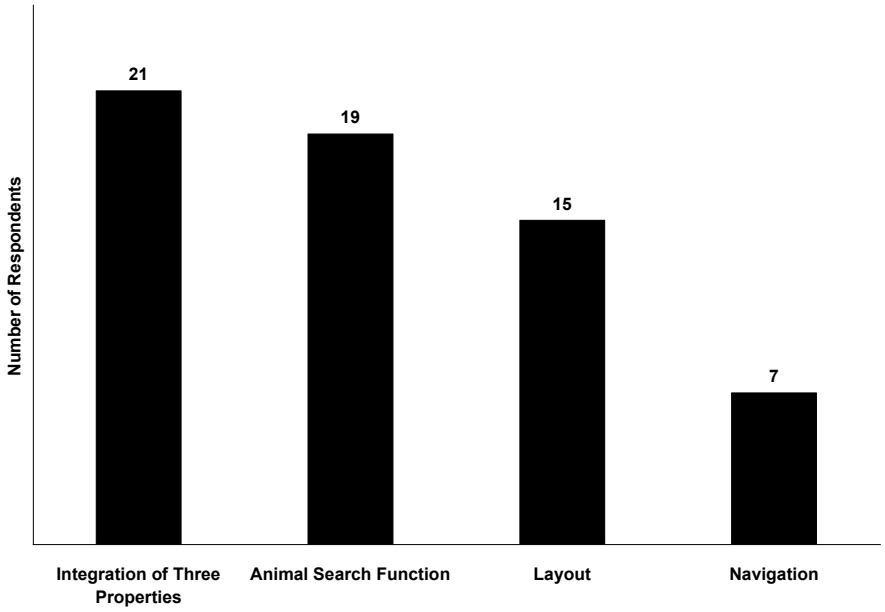

Figure 30. Attributes Staff Like about the Structure of the Zoos Victoria Website

The staff selection of the integration of the three properties is important because it suggests that staff is open to the idea of a higher order of integration on the Zoos Victoria website. Our team discusses in great detail a proposed integration scheme in the recommendation section. Staff also recognize the importance of the animal search function and helped our team to decide that this function should be an integral part of the proposed new layout.

Staff's Feelings Towards Website Content

The staff was next asked two questions pertaining to its most and least favorite aspects of the content of the website. Figure 31 displays the staff's favorite content attributes.

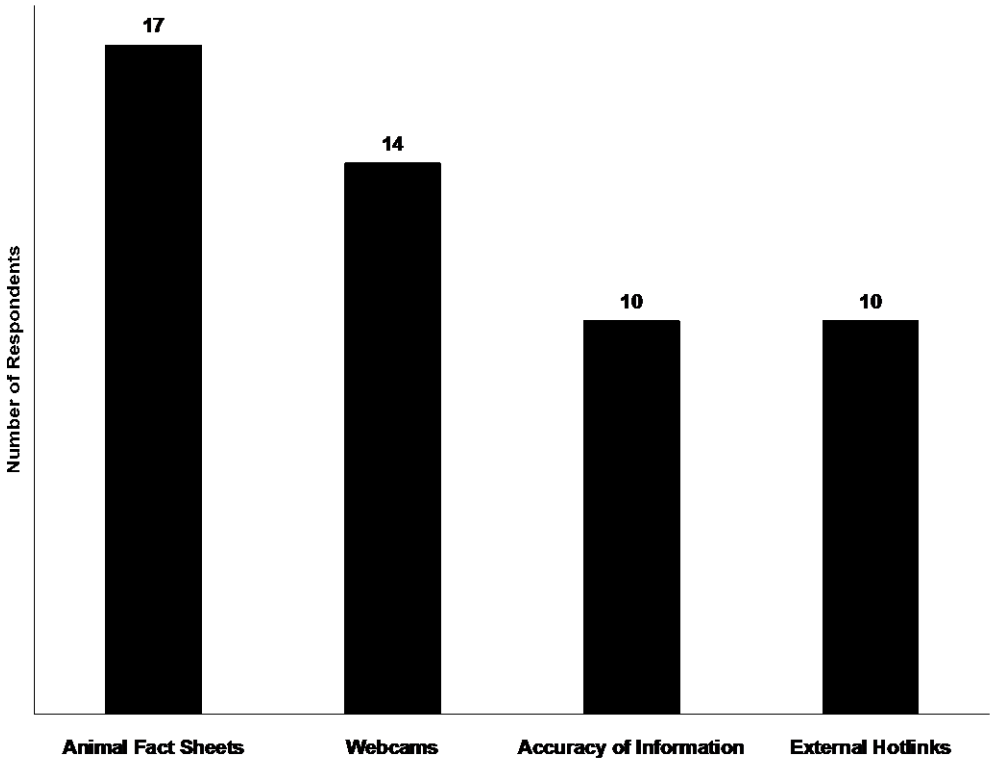

Figure 31. Staff's Favorite Content Attributes Frequency

The two highest rated content attributes were animal fact sheets followed by webcams. The high rating of animal fact sheets correlated to the importance of animal and plant information on a website cited by visitors. It is apparent that animal fact sheets are an important aspect of the current website and should not be deleted in the renovated Zoos Victoria website. However, the high rating of webcams by staff conflicted with the low rating given to webcams by visitors. Intersubjectivity of the term webcam may have once again been an issue as it was in visitor surveys. In addition, staff members may feel more comfortable with this technology as they are surrounded by it on a daily basis and subsequently may look at it in a more favorable light. This discrepancy should be investigated before the installation of additional webcams across the three properties.

Figure 32 displays staff members' least favorite content aspects.

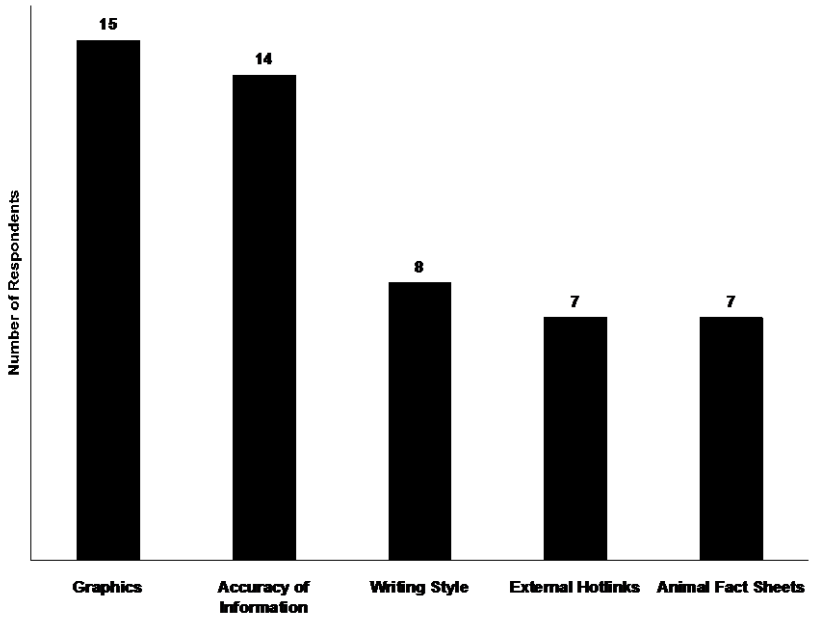

Figure 32. Staff's Least Favorite Content Attributes Frequency

Graphics was the most frequently cited undesirable content attribute. This indicates that staff members are unhappy with the quality and quantity of graphics in the website. The Zoos Victoria website currently features a minimal amount of graphics. Staff members also cited accuracy of information as an acute problem. Although our team is unable to gauge the validity of this complaint, we will recommend an assessment of all current content based on these results.

Staff's Staff Website Use

Finally, staff members were asked a series of questions regarding the staff website, its current use, and functions that it could be used for in the future. While the staff website is only a small portion of the website catering to a specific demographic, our team still felt it was important to also include this section in the recommendations. Figure 33 displays staff website usage by staff members. It is apparent that a large majority of the staff that answered the questionnaire use the staff website frequently or occasionally. The results to this question confirmed that the staff website was actively used and would, therefore, benefit from renovation.

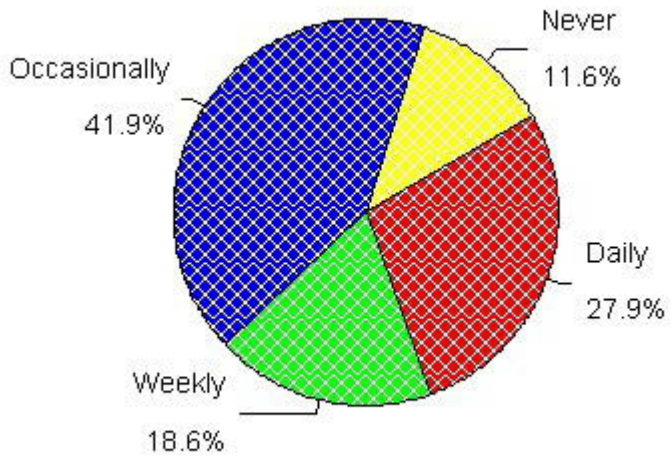

Figure 33. Staff Website Usage

The final staff survey question explicitly asked participants about what functions they felt were needed on the staff website. Our team did not explore any of these possibilities but rather used this question to gather information on what could be useful to staff members. The current staff website does not feature any of the items listed in Figure 34 below.

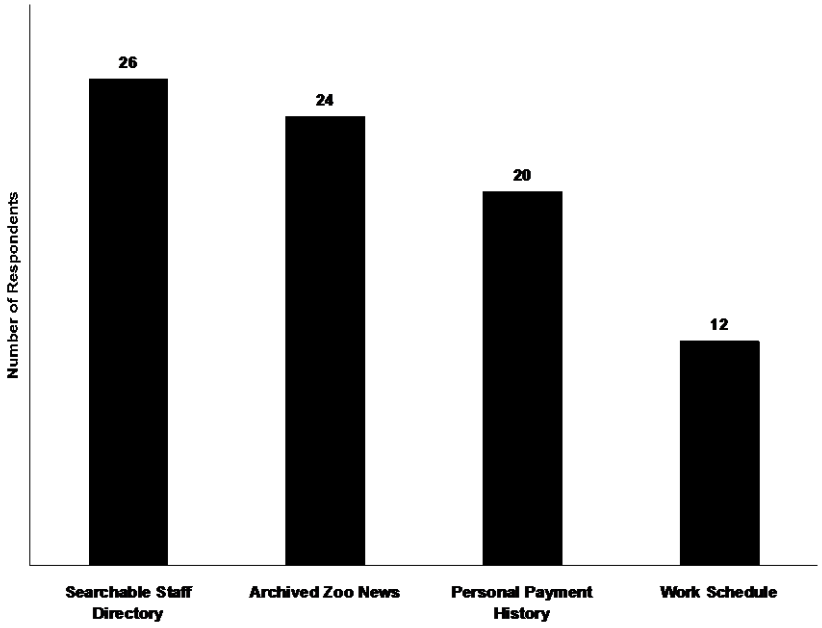

Figure 34. Items Staff Would Like on the Staff Website Frequency

Teacher Interviews

From the Melbourne Zoo Department of Discovery and Learning database, we purposively selected three primary school and three secondary school teachers to be interviewed. These teachers were chosen because they had recently taken students to the Melbourne Zoo for educational purposes. Also, we chose teachers located at schools that were within a close traveling distance from the Melbourne Zoo, so the interviewer could use public transportation to arrive at the interview. Throughout the interviews of these teachers various themes emerged.

One of the themes was that all of the teachers had access to the Internet from school, and most had access from home as well. Five of the teachers stated that there were five to ten computers with Internet access that their class was able to use. In these cases, the students were allotted one period, usually about an hour, per week to use the computers. One teacher said that it was difficult for her students to access the Internet due to the necessity of a room change. This relocation allowed for the use of only ten computers and was not usually worth the trouble of reserving the space. Therefore, the students were usually given projects to complete at home using the Internet. In most of the schools, computers are bought and upgraded as the budget allows.

The Zoos Victoria website was visited by four of the six teachers in search of information regarding school excursions or animals. The website serves as an introduction to the Zoos and possesses a high level of attraction to these teachers since the Zoos are local and address many issues that are close to home. When asked about specific features on the website, one teacher named the butterfly section as the most appealing. Other positive remarks were made regarding the animal search function and integration of the three zoos into one site. The four teachers who had seen the site stated that it was not geared enough toward children. One teacher focused on the physical features regarding the difficulty of the language, contrast of

colors, size of objects and cluttered pages. Another teacher commented that there needs to be more interactive activities and educational games. A common request was for more information on the animals at the Zoos, as well as information regarding the habitats and plants. There was some discrepancy between the usability of the site as three teachers said it was easy for them to find what they needed, while a fourth expressed her concern with the students having difficulty navigating the Zoos Victoria website. Three teachers have used resources they found on the website in their classroom and recommend the website to students.

All the teachers were asked what they would like to find at the website regarding education, animals, and plants. Two mentioned that they would like more information on possible excursions and the educational material that comes with the visits. Worksheets to download and links to many resources were other ideas. One teacher believed that the educational site should contain updated programs, the new programs of the term, pricings, availability and bookings online. Another suggestion was to hypertext difficult words, linking them to a glossary. In order to allow the website to be useful to students, the teachers felt that the site should be separated by complexity so that the children can target information and games relevant to their grade level. Many of the teachers suggested making the animal section more interactive with webcams and games. Detailed information and simple fact sheets for every animal and habitat at the Zoos are also important, as is plant information, which did not even exist.

All of the teachers had used online resources and had given assignments utilizing the web. Most activities were in a structured environment where the teacher gave the students specific tasks to perform on previously selected sites. However, when learning how to use the Internet, teachers stated that children waste a large amount of time on poorly designed sites due to problems with navigation. Therefore, it is important for the Zoos Victoria

website to be easy to navigate for a wide range of age groups. All six teachers gave assignments specifically pertaining to animals in which the Zoos Victoria website has been used as a resource. When planning visits to the Melbourne Zoo, four of the six teachers use the pre-trip information packets as well as follow-up work from the Department of Discovery and Learning.

When asked what method of teaching was most useful, all the teachers struggled for an answer since every student learns in a different way. This question was asked by the interviewer in order to determine the best way to present an educational topic online. Every teacher discussed some level of interaction, such as discussion or activity groups, hands-on, and creative independent projects. Due to the interest in interaction, the types of educational games preferred were competitions, television game shows adapted to the school subject, puzzles, problem solving, and task-oriented games. Since educational games are such a large portion of a children's website, the teachers were asked if they believed there should be a section of the Zoos Victoria website written specifically for children. When asked this question, there was no hesitation or negative response with any of the teachers. All the teachers seemed to know what was in the best interest of their students, so their opinions were valued highly when making recommendations.

As far as online professional development resources and programs, five of the teachers responded enthusiastically. They responded that it will save time traveling and they can learn at their own pace, selecting what is important to their teaching. When asked if they would pay for these services, none of responses were negative, as long as the cost was reasonable. Also, three of the teachers mentioned that every teacher is allotted a certain professional development budget which they could use for anything they felt valuable enough. One teacher was doubtful that people would actually use the online resources, unless there was a big incentive to use them.

Although there were two different categories of teachers selected, many similar comments were made throughout the interviews. There was no significant difference between opinions of primary and secondary teachers. This is a substantial result because it leads our team to believe that all teachers have common goals and expectations of the resources available to their students. Considering how much the website is used by teachers in the classroom, it is surprising that there is no children's section of the website. Each teacher placed a great amount of emphasis on interaction and educational information, which will weigh heavily in the conclusions and recommendations our team will make regarding the Zoos Victoria Website.

Friends of the Zoos Interviews

A total of five Friends of the Zoos (FOTZ) members were interviewed over a two week period. Each interview followed a semi-standardised schedule and lasted approximately thirty minutes. All five interviewees were regular volunteers for the Melbourne Zoo, usually serving two to four days per week, and more if necessary. In addition, three interviewees were retired from the work force, which undoubtedly enabled them to donate more time to FOTZ. The other two interviewees were professionals in the work force. Official FOTZ member documents are confidential, but these five people unequivocally stated that the vast majority of FOTZ volunteers were retired senior citizens. This fact weighed heavily on the remainder of the interview, especially since only two of the five interviewed had seen the FOTZ portion of the Zoos Victoria website. Consequently, our team was unable to extract a large amount of data regarding FOTZ's opinion of the Zoos Victoria's website, especially the FOTZ section. Our team subsequently informed the interviewees of the FOTZ section's contents if they did not have prior knowledge of this section. The items described were the website's explanation of FOTZ membership and its accompanying benefits as well as a membership form in Printable Document Format (PDF).

The interviewees were unanimous in stating that this section was insufficient in satisfying their needs.

Evidence from the interviews may suggest that FOTZ would benefit from increased program advertisement on the Zoos Victoria website. Not all interviewees explicitly arrived at additional features they would like to see added to the section; however, general themes emerged regarding expansion of program advertisement. Two FOTZ interviewees were able to generate a list of programs they would like advertised on the website. These ideas included member activities, non-member activities, and a sampling of the FOTZ magazine, "Zoo News". Each interviewee described a very unique program involving the collection of corks that are sorted and sold to area businesses. Despite the lack of formal web advertisement, the cork program has raised over forty thousand dollars in three years. Promotion of the program via the Zoos Victoria website may increase community participation and should be further explored. Advertising programs and listing events online may increase participation, which could potentially translate into higher membership numbers and more money for Zoos Victoria.

Our team investigated the feasibility of distributing the FOTZ quarterly newsletter, "Zoo News", online via the Internet or email. Each interviewee vehemently disagreed with the idea of an email newsletter completely replacing paper newsletters. The possible cause of this opposition is unfamiliarity with the Internet or resistance to change. This newsletter is considered a huge benefit of FOTZ membership and is valued highly, especially among the volunteers. These five interviewees can not possibly represent the entire volunteer population of approximately five hundred people. Also, there are 46,000 general members of FOTZ who are in a different demographic category and may hold contrasting opinions to the interviewees (ZPGB, 2001). However, since most volunteers are retired senior citizens as are

three of the five interviewees, their unfamiliarity with the Internet may be indicative of a wider volunteer population's experience.

Usability Test

The purpose of completing this usability test was to examine the characteristics of zoological parks and aquaria websites as well as determine the strengths and weaknesses of these websites. All three evaluators completed the usability test for the ten randomly selected zoological parks and aquaria websites. See Appendix D for the complete usability test and the score calculation process. The results in Table 9 show the percentage of total possible points for each evaluator and the average of the three evaluators' scores.

Table 9. Benchmarking Analysis

	Evaluator 1	***Evaluator 2***	***Evaluator 3***	***Average***
Website	**Total (Percentage)**	**Total (Percentage)**	**Total (Percentage)**	**Total (Percentage)**
San Diego Zoo	75.26	58.18	82.52	71.98
South Carolina Aquarium	68.72	61.41	81.15	70.43
Columbus Zoo	71.39	55.76	78.05	68.40
Santa Barbara Zoo	60.94	48.31	68.59	59.28
Detroit Zoo	65.10	45.97	64.85	58.64
Oakland Zoo	61.87	47.96	64.68	58.17
Six Flags	57.07	47.51	66.12	56.90
Potawatomi Zoo	51.36	41.47	53.67	48.83
Harewood Bird Garden	49.49	37.76	55.82	47.69
Henson-Robinson Zoo	49.74	32.61	53.69	45.35

As the table demonstrates, Evaluator 2 always had a lower score than Evaluator 1, while Evaluator 3 had the highest score. This was due to the varying degree of experience in website design that each evaluator possessed. Evaluator 2 was very exposed to website design; therefore, was very critical of the websites. Evaluator 1 had less contact with website design than Evaluator 2 but more familiarity in this area than Evaluator 3, who had little experience in website design. Figure 35 shows the graphical representation of the individual results for each website.

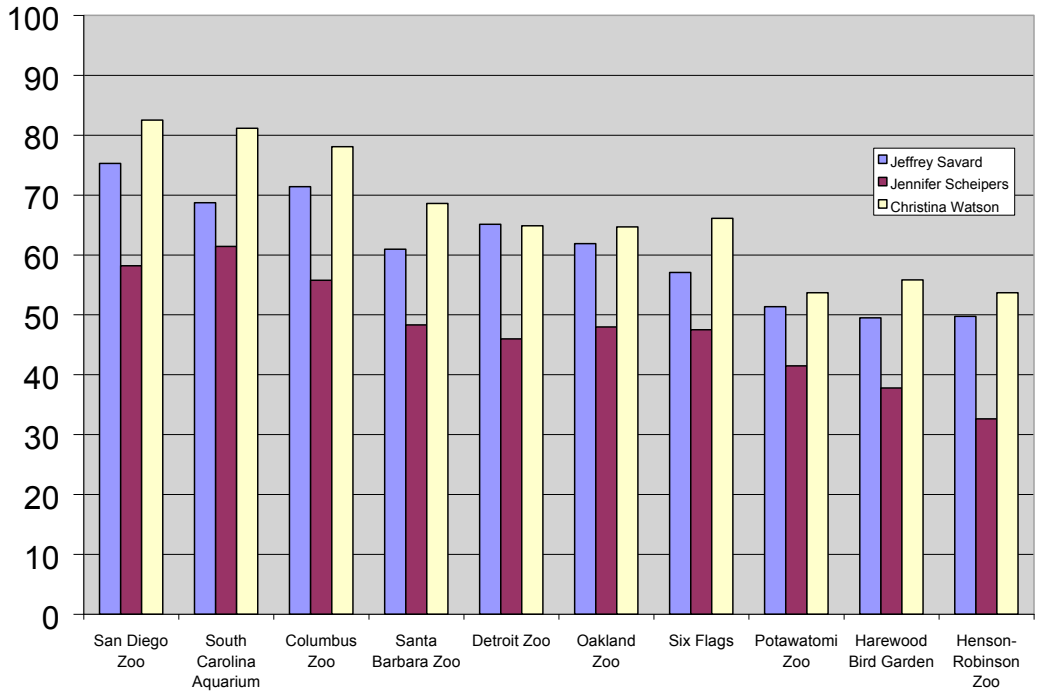

Figure 35. Results of Usability Test by Evaluator

Despite the differences in website design experience between evaluators, the ranking order of the websites was nearly identical amongst all evaluators. The final values calculated for each website per individual were relative to each other, leading to the similar ranking numbers.

Table 10. Evaluator Difference from Mean by Website

	Evaluator 1	***Evaluator 2***	***Evaluator 3***
Website	**Total (Percent Difference)**	**Total (Percent Difference)**	**Total (Percent Difference)**
San Diego Zoo	3.27	-13.81	10.53
South Carolina Aquarium	-1.71	-9.02	10.73
Columbus Zoo	2.99	-12.64	9.65
Santa Barbara Zoo	1.66	-10.97	9.31
Detroit Zoo	6.46	-12.67	6.21
Oakland Zoo	3.70	-10.21	6.51
Six Flags	0.17	-9.39	9.22
Potawatomi Zoo	2.52	-7.36	4.84
Harewood Bird Garden	1.80	-9.93	8.13
Henson-Robinson Zoo	4.40	-12.74	8.34

Table 10 shows the difference of each evaluator from the mean score for each website. There is not a large discrepancy between the percentage difference of each evaluator from the mean. Since the differences are regular and predictable, the data is statistically valid and the ranking order of the websites is accurate. Based on this evidence, we chose to average the results of the three evaluators and establish the final ranking on this calculation. Figure 36 shows the average scores and the rankings of the sites from best to worst.

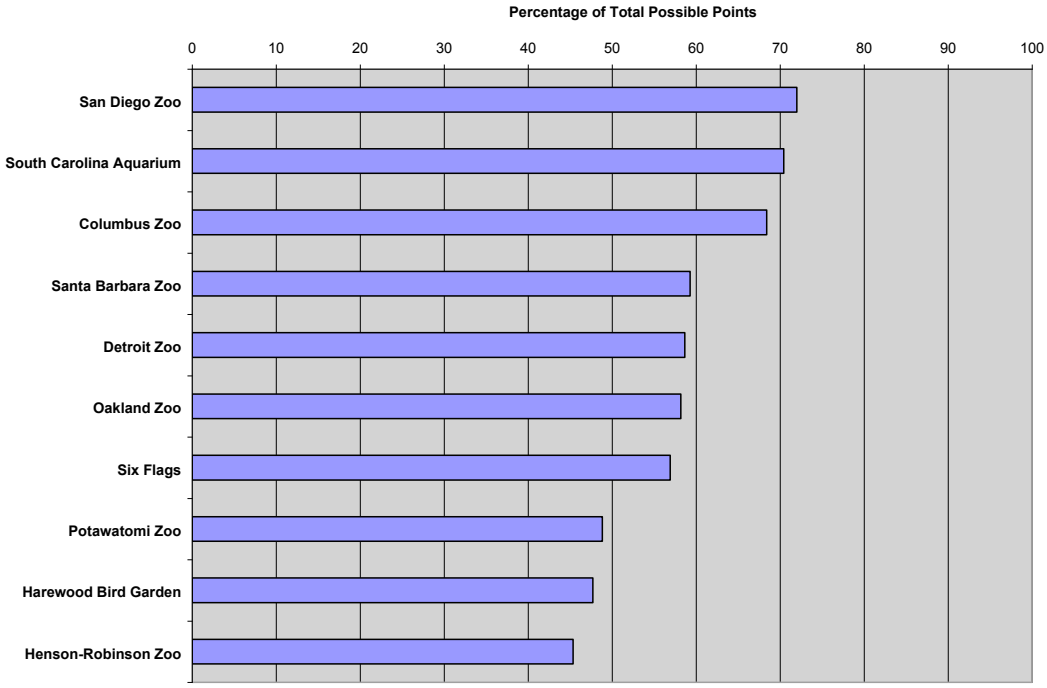

Figure 36. Average Usability Test Results

To further analyze the usability test results, we explored each website's performance in each of the five major sections: content, aesthetics, structure and layout, technology, and miscellaneous. We obtained the total for each section by averaging the three individuals' scores for each question and summing them. Next we attained the percentage earned by dividing the sum by the maximum possible points. This information is depicted graphically in Figure 37.

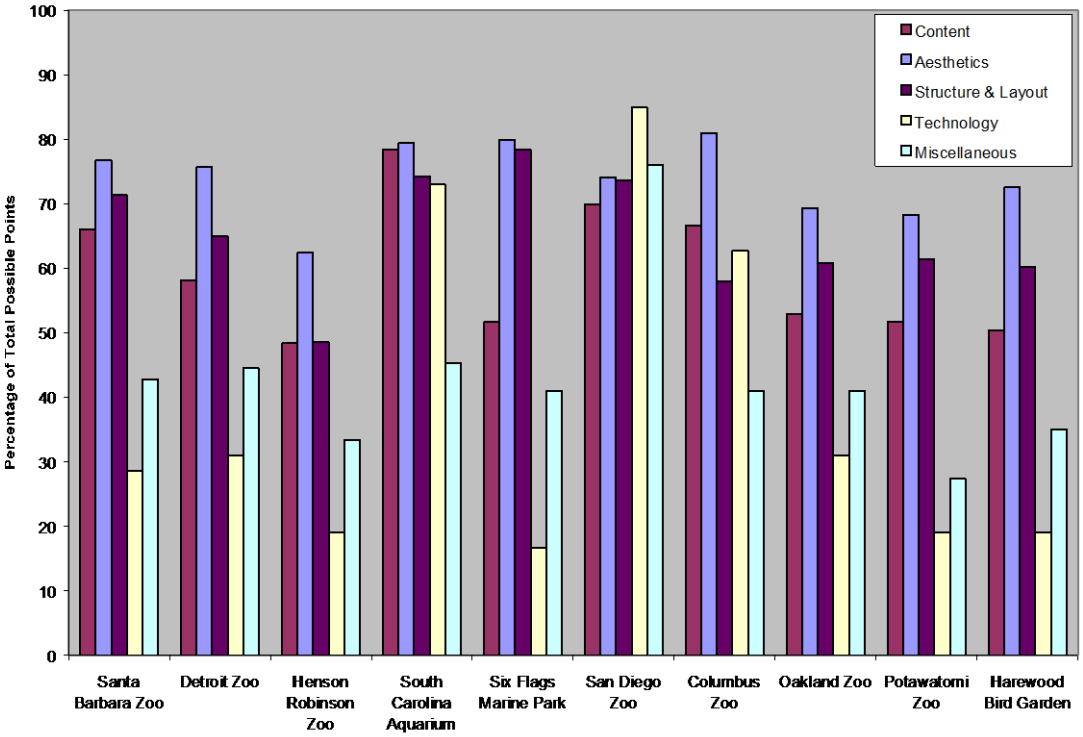

Figure 37. Usability Test Results by Characteristic

In general, the websites are lacking in the use of technology, which encompasses items such as webcams, games, and connection speed. The websites are also weak in what we considered miscellaneous, such as ease of finding the site, browser compatibility, and user feedback. We found that four of ten websites contained a children's section and two of ten had an online store. The websites are generally mediocre for content, structure, and layout. However, they are strong in aesthetics, which encompasses colour, fonts, and graphics.

We believe that our usability test functions properly because people with different website design experience ranked the websites similarly. Due to its success, we used this test as a basis for our second major revision of the usability test that was submitted to Zoos Victoria for evaluation of the new site design.

San Diego Zoo

The San Diego Zoo website contained a huge amount of information in comparison to any of the other sites. It contained a zoo store, as shown in Figure 38, with many products, an eCards site designed to send electronic greeting cards, and much, much more.

Figure 38. San Diego Zoo Shop Page. ***Source: http://sandiegozoo.org***

The site also contained a huge plant information section as shown in Figure 39. This segment on plants was a rarity among the websites examined. Most of the websites contained comprehensive animal sections, but no other website contained ample plant information.

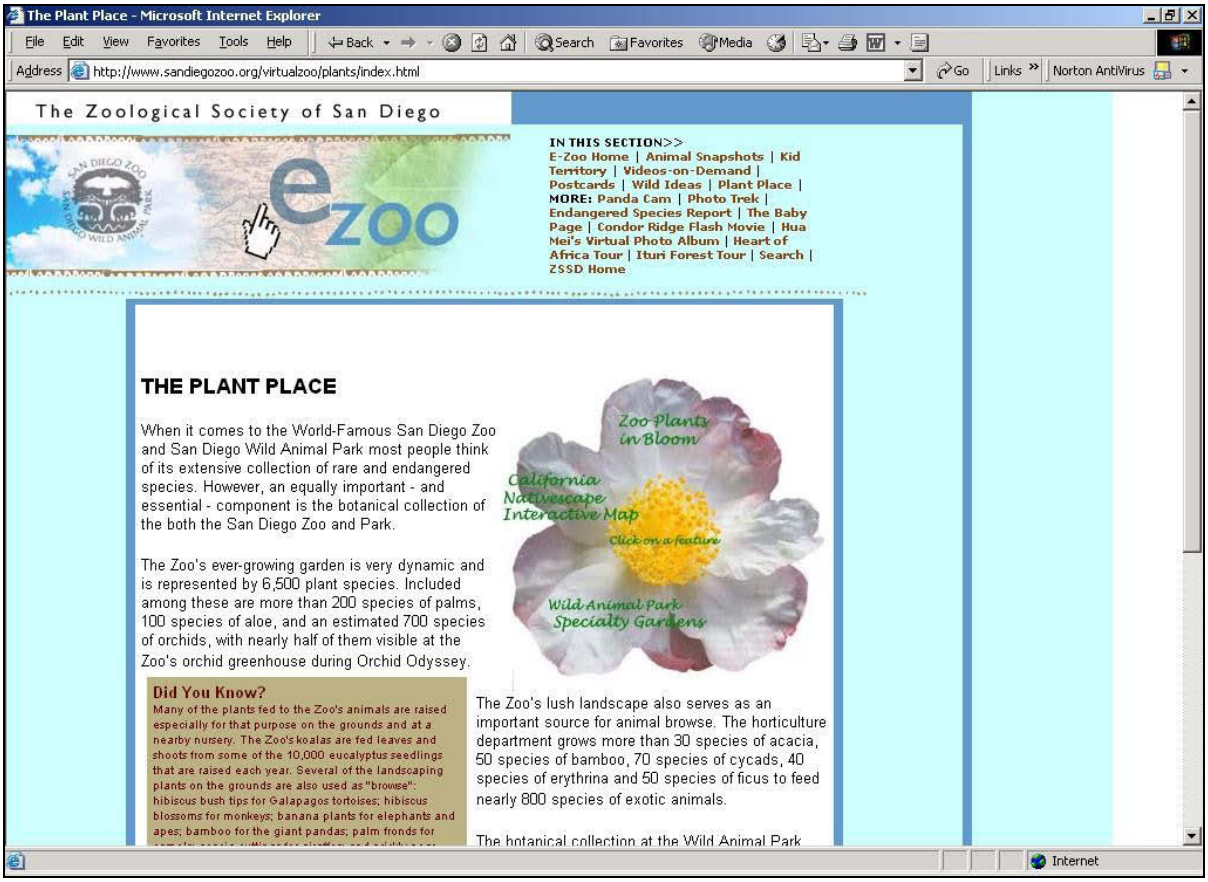

Figure 39. San Diego Zoo Plant Page. ***Source: http://sandiegozoo.org***

Aesthetically, the website was relatively consistent in colour layout. However, due to the variety of colours and large amount of information, the user was rarely attracted to the most important items. This drawback in the use of colour can be seen in Figure 40, which shows the homepage.

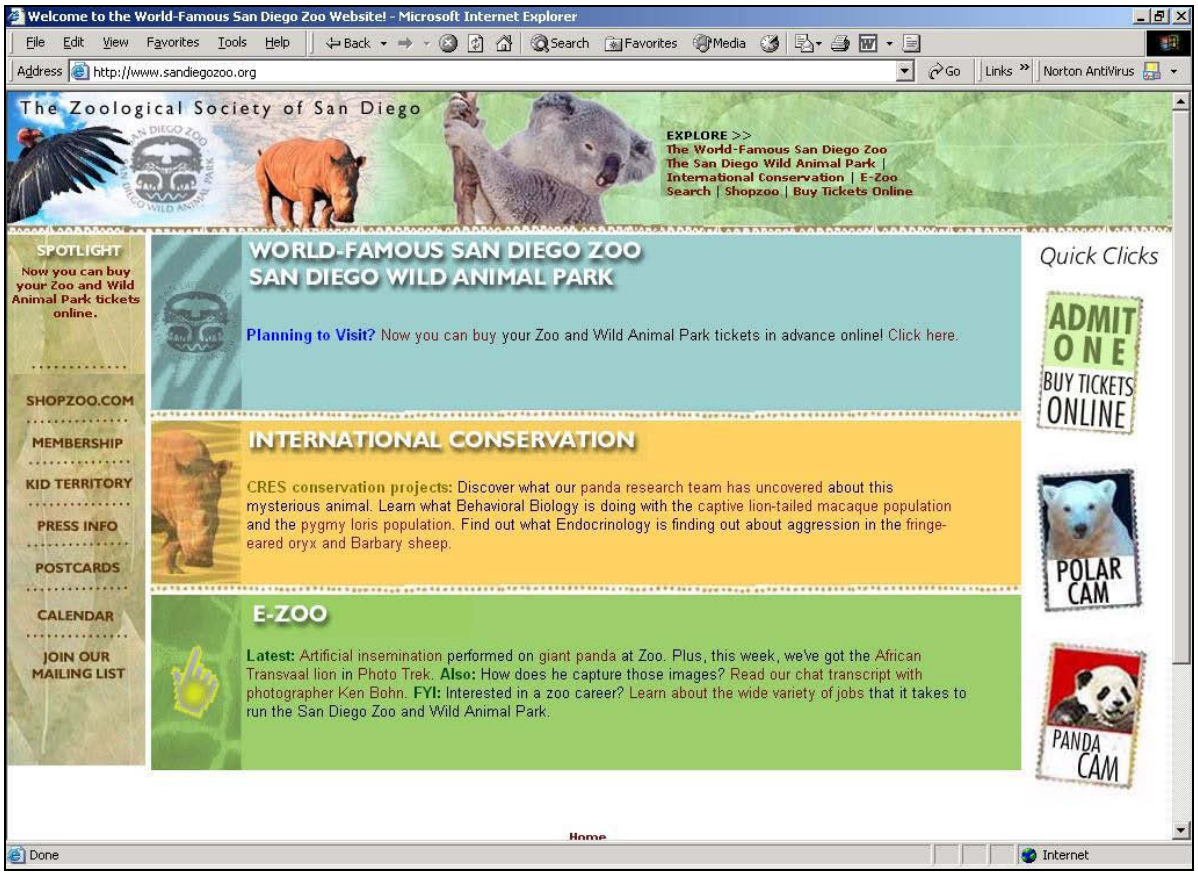

Figure 40. San Diego Zoo Homepage. ***Source: http://sandiegozoo.org***

The navigation of the website was the only serious shortcoming of the website. Navigation throughout the site is very difficult due to the huge amount of information available. Also, the navigation tool that appears on every page is very confusing. As shown in Figure 41, the navigation bar contains links to other items within the same section of the website. However, it does not tell the users what section they are viewing. It also is not easily read as the page titles run over more than one line and contain vertical break lines that confused the users.

Figure 41. San Diego Zoo Navigation Tool. ***Source: http://sandiegozoo.org***

The site did contain a good deal of technologically advanced items including a very interactive children's site shown in Figure 42. Although the site contained educational games, they did not cover a large age bracket.

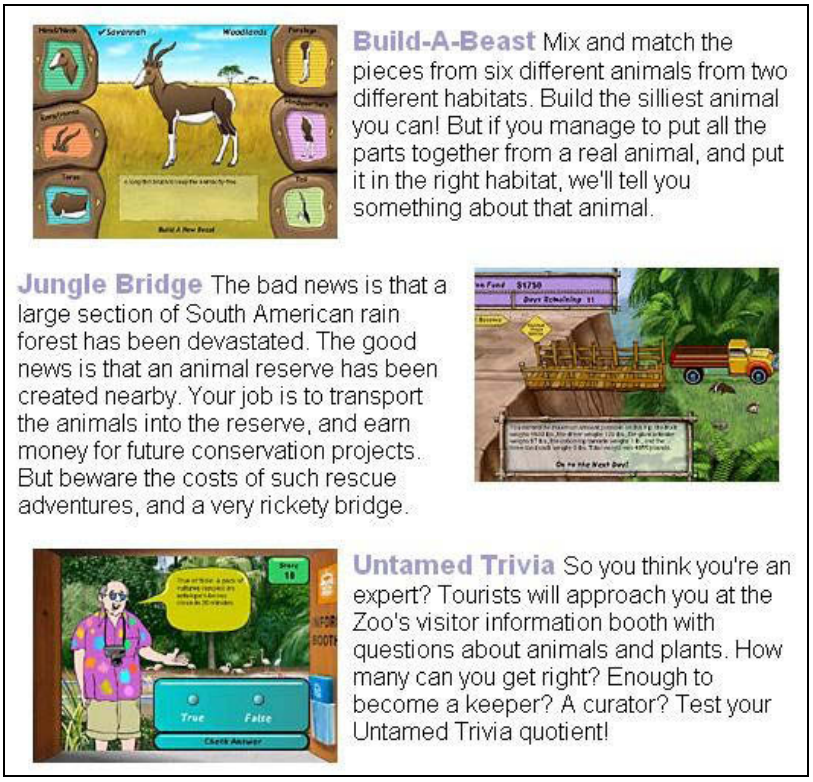

Figure 42. San Diego Zoo Games Page. ***Source: http://sandiegozoo.org***

The site also included an interactive map that showed the user information about each exhibit when the mouse was moved over the correlating region on the map. The panda exhibit information is shown in Figure 43, with the full map in the background.

Figure 43. San Diego Zoo Interactive Map. ***Source: http://sandiegozoo.org***

The website also contained webcams and video footage of most of the animal births and the featured exhibits. The site contained a search function, but did not contain a user survey. The lack of a survey makes it difficult for the webmaster to gauge how well the site is functioning. Overall, the site contained large amounts of information that was not necessarily easy to find.

South Carolina Aquarium

The South Carolina Aquarium's website scored favorably in the usability test for several specific reasons. First, the content was thorough and well presented. The website

contained extensive information about all of its exhibits, a majority of its featured animals, superior teacher resources, and a featured conservation page. Moreover, it contained a dedicated children's section with engaging activities that were created using modern Flash and Java technology. These sections were somewhat difficult to find and should be directly linked from the homepage. It also offered advance ticket purchasing, combination packages with Fort Sumter, and donation information all on the home webpage. The website catered to children, teenagers, and adults, making it the most versatile website tested. Another strong attribute of the Aquarium's website was page layout. Each link from the home page was clearly marked with both graphics in the center of the page and text links on the top and bottom of the page. These text links remained constant throughout the entire website, allowing for fast and simple navigation. The homepage can be viewed in Figure 44.

Figure 44. South Carolina Aquarium Homepage. ***Source: http://www.scaquarium.org***

The South Carolina Aquarium had an extremely complex website due to its expansive collection of information, games, and graphics, but it was obviously designed with the inexperienced user in mind. One minor problem with navigation was the internal home page link hidden within the South Carolina Aquarium logo, but the overall impression left on the user is extremely positive. The cool blue color used in the website, coupled with the prolific use of pictures, leaves no room for misinterpretation of the website's aim. The blue color is initially striking, but becomes visually overbearing after extended use. Despite the graphic intensive homepage, the loading time is reasonable and indicative of proper website design. Additional useful features include a frequently asked questions page, clear directions, an expansive hotlink page, and a list of Aquarium-sponsored community programs. It is an impressive website with several qualities Zoos Victoria should consider emulating.

Columbus Zoo

Columbus Zoo website contained detailed animal fact sheets. These fact sheets included pictures of the animal that displayed information when the mouse was moved over different portions of the body. This activity was very interactive, engaged the users, and kept them interested in the material presented. The navigation bar contained blurred images behind the text that made it difficult for the users to view the pictures; therefore, causing user distraction. Furthermore, there was not a large enough colour contrast between the text and background in the navigation bar, thereby, decreasing the user's ability to read the text. These unfavorable attributes are displayed in Figure 45.

Figure 45: Toolbar of the Columbus Zoo Website. ***Source: http://www.colszoo.org***

The structure and layout of the site made navigation difficult because it was not consistent. When in the animal section, the user could not link from one portion of the site to another without returning to the homepage. This website's technology, unfortunately, does not include webcams or video of the animals in any form. Also, the educational games are interactive, but are not always informational. The website does not contain a search feature or an easy way for the user to provide feedback. The lack of these aspects is detrimental to the usability of the site.

Santa Barbara Zoo

The Santa Barbara Zoo website featured an animal list that was both easy to find and user-friendly. Animals were classified according to species rather than habitat, which was easier for the less knowledgeable user. Each animal name was listed with a link to a separate page containing the information for that animal. Part of the animal page is featured in Figure 46.

Figure 46. Santa Barbara Zoo Animal List. ***Source: http://santabarbarazoo.org***

Each animal had a close-up picture which helped with species identification. However, several of these pictures were fuzzy or distorted and only about half of the animal information pages had an article of supporting text. When text was present it simply presented pertinent facts, rather then engaging the reader in a story. The content on the entire site echoed the sentiment of offering pertinent and exciting information, but failing to convey it in a stimulating way. The choice of teal and purple colours was also questionable because the website felt like an entertainment site rather than an educational one. Furthermore, the background was hard to decipher and did little to increase the contrast between text and background. The navigation bar was organised from top to bottom in a descending order of importance and all the major subsections of the website were displayed in the bar. Each word exposed a list of choices when the mouse moved over it. This feature was helpful at first, but

became cumbersome when streaming the mouse over the navigation bar or accidentally leaving the mouse in this area while trying to read information on the right side of the page. In addition, alternate text appeared for each major section, but this text partially blocked the dropdown list, as shown in Figure 47.

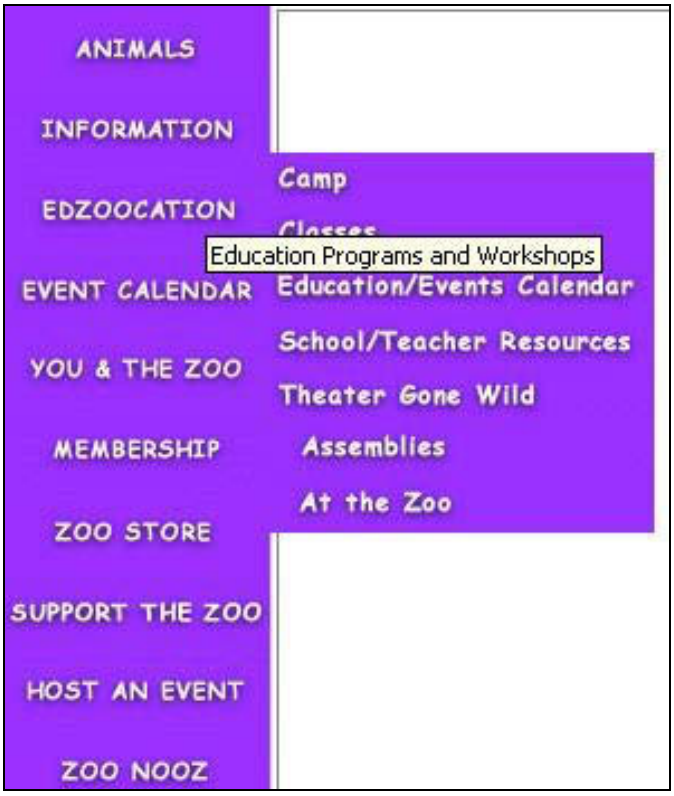

Figure 47. Navigation Bar, Santa Barbara Zoo. ***Source: http://santabarbarazoo.org***

Overall, page layout was good, but was overshadowed by the inferior aesthetics and presentation of information.

Detroit Zoo

The Detroit Zoo website contained a comprehensive range of information on the zoo itself, including hours, exhibits, voluntarism, donations, etc. However, it encompassed very little information on animal and plant species. Aesthetically, the website was very well done and only had a few distractions. One of these distractions was the logo of the Detroit Zoo on each webpage. Although the logo was visually appealing, the size of it did not allow for a practical page layout. As can be seen in Figure 48, the page needed a scroll bar just to display

a small amount of information on the home page. This hindrance was because the logo at the top and the navigation bar to the left were too large.

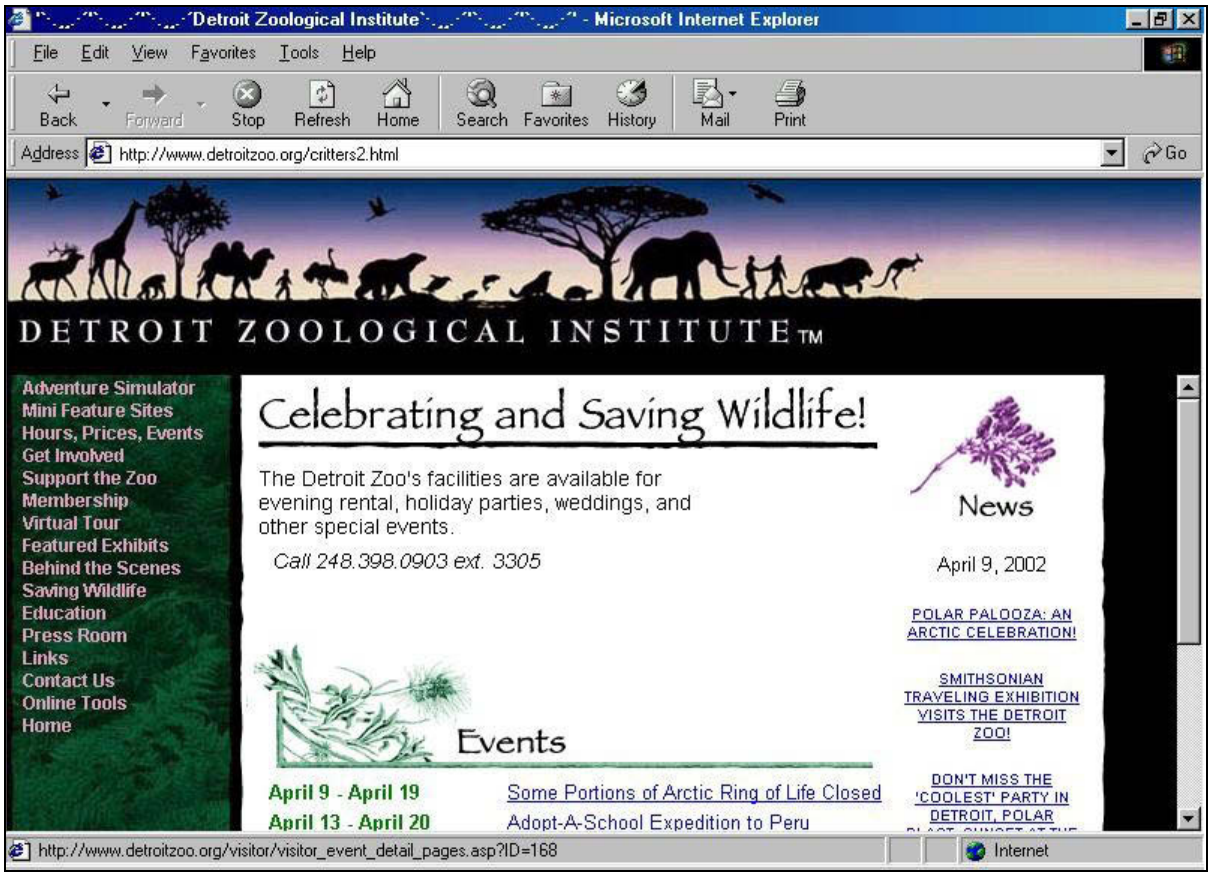

Figure 48. Detroit Zoo Home Page. ***Source: http://www.detroitzoo.org***

Another of these distractions was the title bar text as it contained unnecessary decorative symbols. Please see Figure 49 for a picture of the title bar.

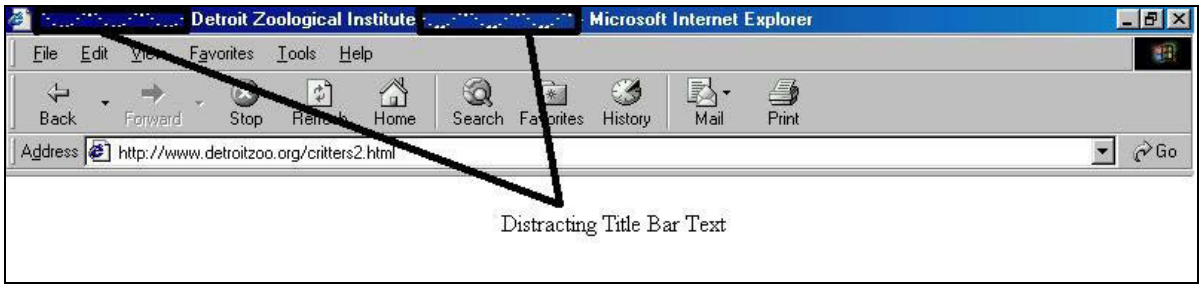

Figure 49. Detroit Zoo Title Bar. ***Source: http://www.detroitzoo.org***

Similar to the title bar text, the status bar text was visually distracting and impeded navigation between windows of different programs. Please see Figure 50 for a picture of the status bar

that shows the inability to determine what website was being viewed when the window was minimized.

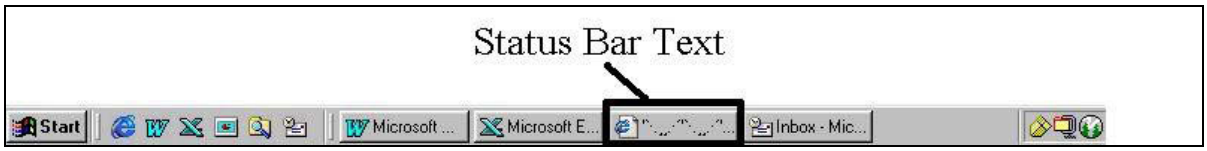

Figure 50. Detroit Zoo Status Bar. ***Source: http://www.detroitzoo.org***

In general, the structure and layout of the website was very good due to an easy to use navigation bar that appeared on every page of the website. When a major section was selected, the subheadings appeared as well as a page detailing what the major heading included. Figure 51 shows the "Get Involved" major heading and the subheadings of "Employment" and "Volunteering".

Figure 51. Detroit Zoo Navigation Bar. ***Source: http://www.detroitzoo.org***

The website utilized very little technology; it had neither webcams nor educational games. Its connection speed was fine, but nevertheless, it was lacking in its use of technology. There was no search feature to make navigating the site easier for the user. The site was also

lacking a user survey or an email newsletter to those involved with the zoo. Lastly, the website made use of "pop-up" windows to advertise its two new attractions, "The Artic Ring of Life" and "Amphibiville". "Pop-up" windows are not inherently bad, but the "pop-up" window did not complement the site. It was more of an advertisement and it "pops-up" every time the user returns to the homepage, which was very annoying to the user.

Oakland Zoo

The Oakland Zoo website contains a great deal of information, especially that regarding animals. As shown in Figure 52, the site contains a full listing of all the animals on display at the zoo with individual fact sheets containing habitat, feeding, breeding and other information on each animal.

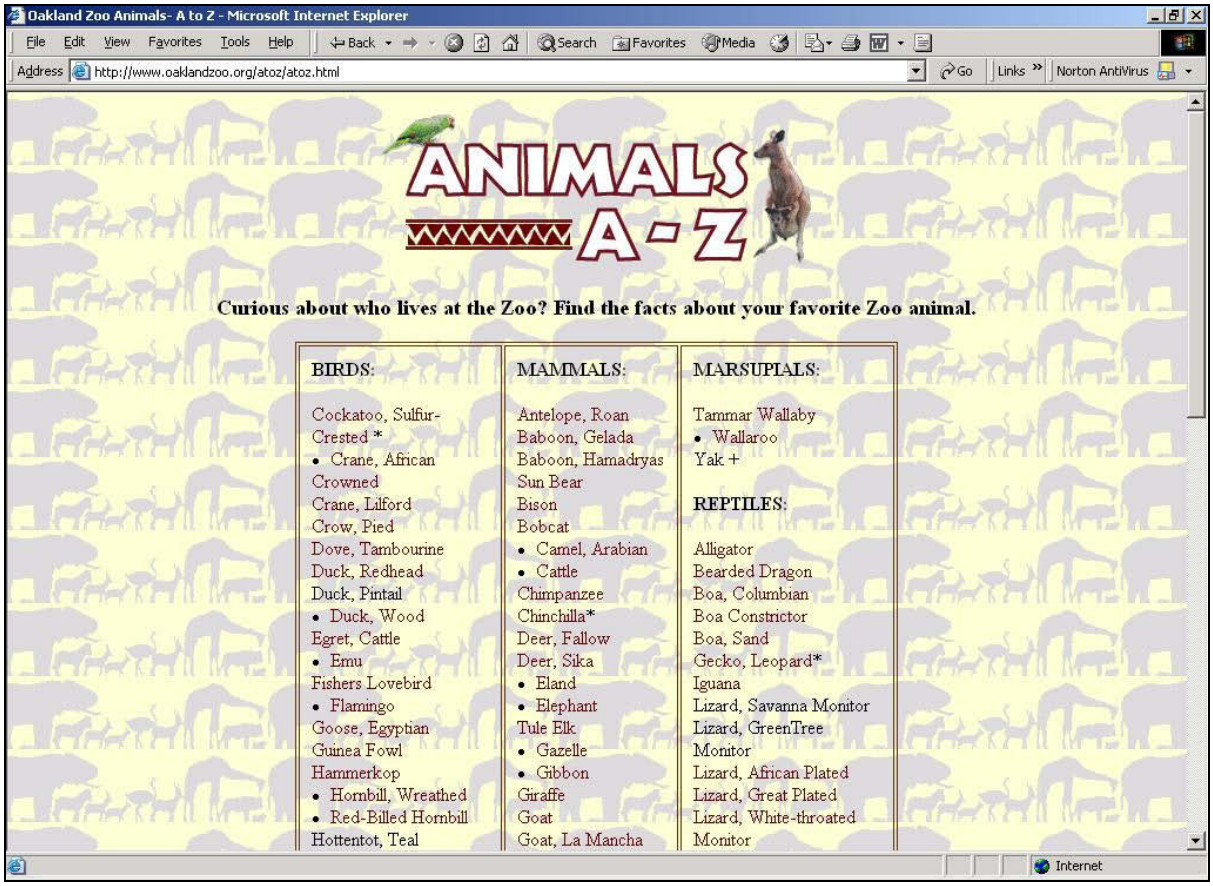

Figure 52. Oakland Zoo Animal Page. ***Source: http://www.oaklandzoo.org***

Although the site contained a good amount of information regarding the zoo's animals, it lacked both information about the plants the zoo contains and interaction to keep the users'

attention. The one portion of the site that contained movement was the homepage, which is shown in Figure 53. Unfortunately, though the page exhibited motion, it was simply a slide show of photos and provided the user with no interaction.

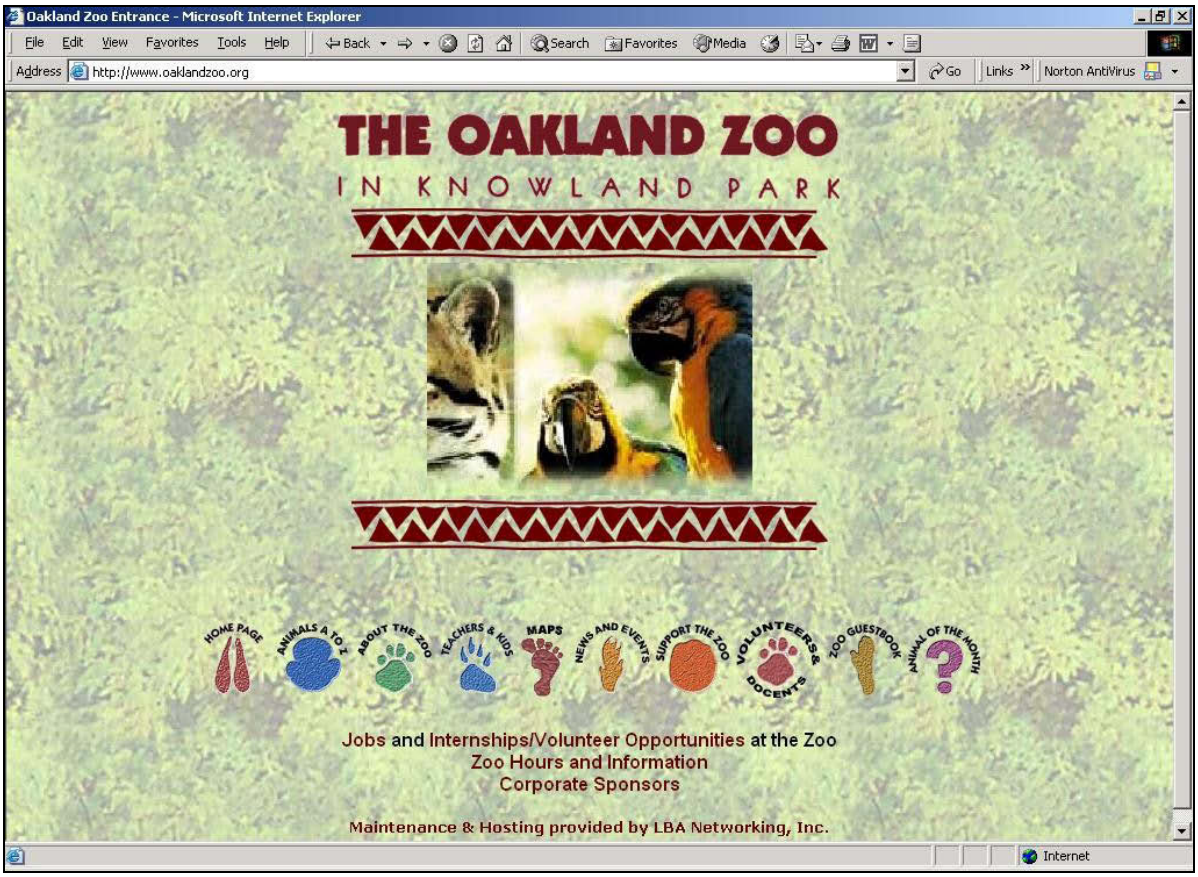

Figure 53. Oakland Zoo Homepage. ***Source: http://www.oaklandzoo.org***

The page had relatively pleasing colours to allow the user to easily distinguish the links and text from the background. The colour scheme also provided the user with a natural setting and a sense of the being at the zoo, as shown in Figure 53. Despite the pleasant aesthetics, the user was easily aggravated by the changing slide show on the homepage. Also, the user was easily distracted by trying to determine what animal made the footprints used the in the navigation bar shown in Figure 54.

Figure 54. Oakland Zoo Navigation Bar. ***Source: http://www.oaklandzoo.org***

The navigation bar was a disturbance, however, it did help the user move around the site easily as it appeared unchanged on every page and was self-explanatory due to the easy to read titles. The website was heavily lacking technology such as webcams or an interesting children's section. There were a few games on the site, but they contained very little color and applied to only a few age groups. The site was also lacking a user survey or an email newsletter to keep the user updated on the recent zoo events, decisions, and other pertinent information.

Six Flags Marine Park

The Six Flags Marine Park website contained a large amount of information regarding how and when to visit the park as well as which rides were available, but very little about the animals. There was very little educational information on either the rides or the animals. However, the site was aesthetically appealing as shown in Figure 55.

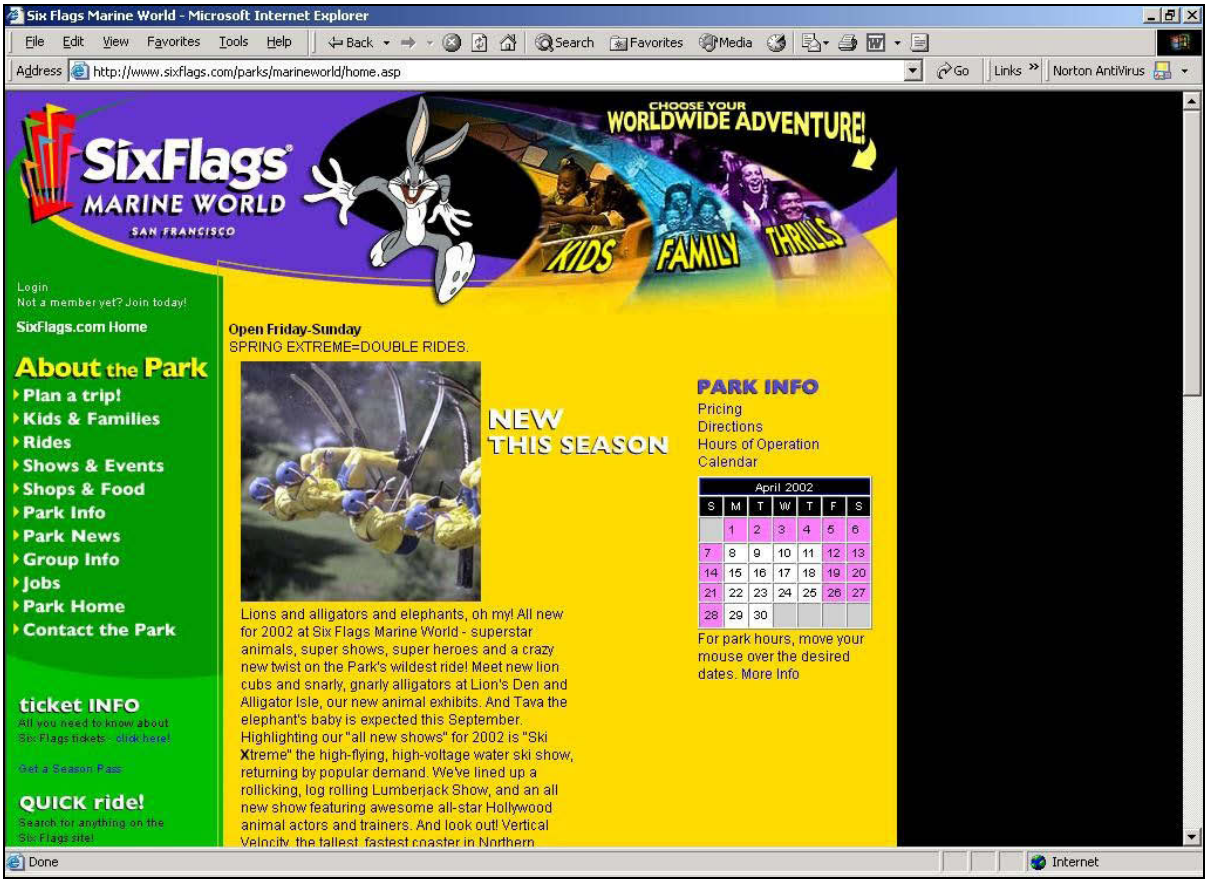

Figure 55. Six Flags Marine World Homepage

The website contained a very useful navigation bar that appeared on every page and assisted the user in navigating the website. The technology the website contained was very limited and there were no videos, webcams, or a children's section. There was a search function to provide the user with easier navigation, but no useful site map or user survey to aid in determining if the website was effective.

Potawatomi Zoo

The Potawatomi Zoo website was a section of the South Bend Parks and Recreation, which lead to many mistakes and drawbacks. The initial hotlink to the zoo was difficult to locate and the website address gave no description of the organisation. In addition, the Zoo website was devoid of educational material; it does not contain plant and animal facts, interactive activities, or devoted sections for specific demographic groups. It was a plain website with no tables, visually appealing navigation bars, or impressive graphics to capture

the audience's attention. It simply did not engage the user for any extended period of time. The website did well in displaying visitor information in an efficient and timely manner, but lacked any additional information. Furthermore, the website had not been updated since February 18, 2002, which prompted the user to question whether information such as admission times and prices and educational programs were correct. There were no instances of supplementary technology used to further the website's educational ability. The website made the Zoo appear to be unimportant and unworthy of a repeat visit.

Harewood Bird Gardens

The Harewood Bird Gardens website catered exclusively towards a mature audience. There was no evidence of a children's or teenage section and the bird information presented was too scientific to be understood by all age groups. This sophisticated theme was also reflected in the website's abundant use of white space, light fonts, and unobtrusive backgrounds, which created a light and airy feel. Although the site did not contain a large amount of information, navigation was still difficult. This complexity was due to the position of the navigation bar on the right side of the document, and the 45-degree placement of the text within the navigation bar. An example button is located in Figure 56.

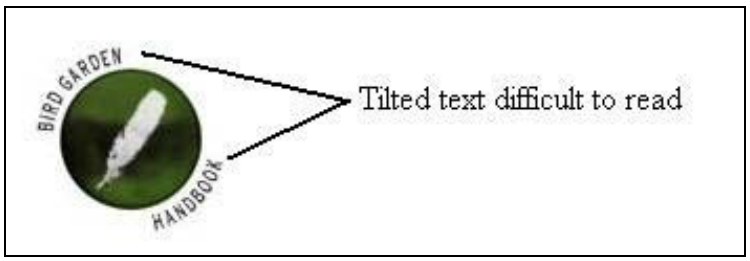

Figure 56. Example navigation button from Harewood Bird Gardens Website. ***Source: http://www.harewood.org***

The home page link was small and difficult to locate and the navigation bar moved from the right side to the bottom of the document on two separate occasions. The combination of these navigational hindrances added to the users' confusion. The Harewood Bird Gardens

website did not use any form of technology in data presentation. Furthermore, the website was merely a section in the Harewood Estate website. Consequently, the purpose of the website was unclear and the initial Bird Garden hotlink was hard to find.

Henson-Robinson Zoo

The Henson-Robinson Zoo website represented a dichotomy of form and function. The website was effective in conveying directions, admission time and prices, and other commonly sought-after information clearly and quickly. However, the website did little beyond presenting basic zoo facts. It lacked attributes found on other educational zoo websites such as a species list, animal information, and devoted subsections. The purpose of the website was vague; there was more literature advertising zoo parties and money-making activities than conservation, fauna, and flora education. Furthermore, the website was not aesthetically pleasing; the colors contrast and it lacked modern Hyper-Text Markup Language (HTML) such as tables or frames. Finally, several hyperlinks did not function and the page had not been updated since April 2000. It was a poor example of a zoological park website and needed a complete content and technology redesign before it could possibly become a viable educational tool.

Conclusions and Recommendations

We can conclude from our data that a well-designed zoological parks and aquaria website consists of many specific features. We have divided our website recommendations into six categories: content, aesthetics, navigation, technology, integration, and advertisement. A bulleted list of the recommendations is available in Appendix L.

Content

Content is an extremely important facet of the Zoos Victoria website. All information contained in the website should emphasise building on the zoo experience. The website should be designed to both complement and supplement one's visit to the Zoo. There are so many different people who visit the Zoos Victoria website; therefore, it is up to the website to effectively convey information to each and every demographic group.

General Content

There are several aspects of the website that can be improved without much time or effort. One such page is a glossary of zoological terms. A glossary is necessary since the website has to be comprehendible to users of all age and education levels. A list of defined terms will allow for articles to be written with more complexity, yet still readable by all age levels. Difficult or uncommon words, zoological jargon, or abbreviations should all be present in a glossary, which can then be incorporated into the educational section of the Zoos Victoria website. A person who is researching zoological material or reading an article may wish to use to online glossary to increase their vocabulary. We also recommend to create a list of Frequently Asked Questions (FAQ's) if there are many repetitive questions from visitors. The addition of this list will decrease the number of simple questions to the Zoos and allow Zoo officials to spend more time responding to complex queries. Another recommendation regarding visitor services would be to have a clearer map of the Zoos available on the website. It is difficult to determine where the entrances are located on the

current map, but this can be easily fixed by scanning in a new version of the Zoos maps. Simple and easy access to information is an important aspect of the Zoos Victoria website.

The homepage of the website is the user's first online impression of Zoos Victoria. Our team recommends that the website feature a story on the homepage of Zoos Victoria, as well as on the opening pages of the three individual zoos. This story would include an attractive graphic and article about a recent happening in the Zoos. For example, it could be an event, an accomplishment of an employee, a project, or involvement overseas. Below this featured story could be the upcoming events, as well as a link to more stories and events for the reader who would like to know more. Availability to this type of information would captivate the users and create a dynamic website that would promote repeat visits.

Contact information for specific people within the zoos is very important to public relations. E-mail addresses and phone numbers of all departments should be available for website visitors. This contact information should be present under "contact the zoo", along with a general zoo e-mail for someone who does not know what section their question falls under. A feedback form should also be available from this section so the user is invited to give their opinions on the website. Another important aspect is webmaster link. At the bottom of each page, there should be a hotlink that says, "any problems, contact the webmaster". Our team believes these small steps to increase communication between the user and the Zoos will greatly impact the online zoo experience.

Detailed and Accurate Information

As gathered from the staff questionnaire, we realise that not all of the factual information on the website is accurate. This misrepresentation is important because many people, including students and teachers, use the website as a source of information for research projects, conservation techniques, as well as general enrichment. Therefore, we strongly suggest that each page is reviewed, corrected, and updated. Similarly, it is important

that a date of last update and date of creation is present on each page. This aspect is necessary so the users know if what they are reading is recent information. There should also be an image that advertises newly posted information. By having a prompt such as "NEW!" frequent users will be able to notice what they have not looked at before instead of wasting their time viewing old information. These little changes will significantly increase the online zoological experience with the Zoos Victoria Website.

Animal and Plant Information

The availability of animal and plant information is what attracts many people to a zoo website. This fact is supported by the staff's ranking of the fact sheets as the most liked website feature and the visitors ranking it as the fourth most important aspect of a website. Currently there are no plant fact sheets and there is limited information regarding habitats. These sections need to be developed due to the fact that many people may try to access this information since the name "zoological parks and gardens" explicitly states the presence of both flora and fauna. Furthermore, there should be an electronic greeting card option for every plant and animal featured in the three zoos. This feature will interest visitors and educate them about various flora and fauna. The following information regarding the improvement of animal fact sheets should also be applied to the plant and habitat fact sheets when they are developed.

There should be a fact sheet available for every animal in each of the three properties. A list of these fact sheets should be easily accessible from the homepage. Most importantly, when the animal page is viewed, there should be the same text that is on the fact sheets available on the regular page for those viewers who just would like information on the screen rather than printed. There should be a link on the website that says, "click for a printer friendly program, Adobe Acrobat is needed for this function". As of now, the fact sheets are only available in Printable Document Format (PDF), however many users do not have Adobe

Acrobat Reader with which to open the file. There is an icon for Adobe Acrobat Reader next to the fact sheet link, but many people do not know how to download a program or may not realise to use the link. A better explanation such as "click here to download program to view animal fact sheets" should be available next to the icon. Information on the Internet should be available at the click of a button rather than force users to download a program.

As for the content of the animal and plant fact sheets, there is no doubt that a page of detailed information should exist for each animal, plant, and habitat. However, there should also be a box in the corner of every flora and fauna page that contains "quick facts" or "unusual facts" so that a person with a limited amount of time can still obtain useful information. All of these fact sheets should also contain language and vocabulary suitable for all audiences. The Zoos Victoria website can be a great resource for both visitors to expand on their visit to the zoos by learning more about the animals they saw and for international website visitors to learn about featured animals or those native to Australia.

Education

As discovered in teacher interview, it is very important that the website have a well developed education section. The first step in accomplishing this task is to expand and enhance the descriptions of the Zoo School lessons. The Zoos should promote their great programs by describing in detail what the students will experience with each class and grade level. Also, there should be pictures of the children doing hands-on activities as well as pictures of the different Zoo School classrooms. Greater details regarding these educational programs will allow teachers to know more about what is available and will likely increase the registration numbers for each class.

One way to facilitate the bookings of the educational classes is to have an online bookings form. In the short term, the online bookings page can contain a form to fill out which will then be sent via e-mail to the bookings officer. The bookings officer will then

reply via e-mail to the teacher who submitted the request. In the long term, when there is a secure server, this form can be sent to a database and contain areas where the teacher can book immediately and make payments online. Once the online bookings form has been perfected and visitors feel comfortable submitting personal information and credit card information over the Internet, the form can be used for other areas of the Zoos Victoria website. Visitors will then be able to book tours, camps, and function spaces online with no difficulty.

Another feature that would benefit both teachers and students are online educational handouts that would be received upon registration for a zoo school class. Once teachers register for a class, either online or over the phone, they would receive a user name and password. Then the teachers can use that information to log onto the secure educational website to obtain the pre-visit handouts, worksheets to complete upon arrival to the zoos, as well as follow-up worksheets. The availability of these resources online will save the zoos from mailing out multiple copies to teachers and allow the teachers to access the information during a specific time period leading up to and following their zoo visit.

Being involved with education, teachers continuously want to expand their knowledge through professional development resources and courses. Assuming a secure server would be in place, we suggest that the Zoos Victoria website contain online classes available to teachers for a minimal cost. This would allow the teachers to move at their own pace and learn the information of interest to them. The Department of Discovery and Learning must advertise the online professional development programs at the right time of year so teachers are aware of program topics and account for them in individual professional development budgets. Timing and advertisement are key factors in developing successful online professional development programs.

Children's Section

Children in this era incorporate technology and the Internet into their daily life. Specifically, children with Internet access spend 83 percent of their time online performing school or educational activities (NOIE, 2000). One way to increase use of the Zoos Victoria website is to attract the younger audience. Melbourne Zoo visitors cited a children's section as the most important aspect of a website and teachers also thought the section was important. Therefore, a children's section of the Zoos Victoria website needs to be created. This section should have a direct link from the homepage and should be attractive to children. Since the section needs to be child-oriented, it should have a different design from the rest of the Zoos Victoria website. Vibrant colours and an interesting layout that captivates the audience should be employed. Upon entering into the children's section, there should be options as to what age section the user would like to enter. If the site is broken into sections depending on ages, it will enhance each user's experience because they will be viewing activities relevant to their grade level. From the children's section, there should also be links to the animal, plant, and habitat information as well as to the education page.

One specific and very important aspect of the children's section is the educational games. These games need to be interactive and include colour. We recommend that the children's section games target different years and are incorporated into specific age sections. There should be colouring pages for younger children to colour online or print out and colour. As for other game suggestions, television shows adapted with educational information, crosswords, matching, puzzles, and problem solving are all interesting to children. Games should also be made competitive so that users will become more vested in the games and the Zoos Victoria website. In order to engage the user while teaching them important facts and building upon the zoo experience, the games on a children's website need to be interactive and fun.

Department Representation

Every department within Melbourne Zoo, Healesville Sanctuary, and Victoria's Open Range Zoo should have equal representation on the website. If users would like to find out information about a particular department, they should be able to access a page containing a description of the departments' activities and limited contact information for the employees. By having its own section of the Zoos Victoria website, a department will be able to publicise their accomplishments to those interested. The way to go about having accurate and complete information regarding each department is to give the department responsibility to write the content contained in its section, with instructions to make each page integrated and parallel with other pages. Also, there should be a better method by which staff can post information to the website. Once each department has their own page, this process will be easier; however, sensitive information should be approved by the webmaster. By making this offer available to every department, the zoo will be able to provide a large amount of information to users, thereby, building on the zoo experience.

Staff Website

The staff utilise the website for multiple purposes and so this section of the website can be used to elicit better communication between staff members. From the staff questionnaire, we know that the staff would like an online searchable staff directory. Staff also noted that having a photo of each staff member, a brief job description, job location and e-mail would also be of benefit to the staff. In addition, we recommend highlighting new members of the staff, which will greatly help the existing staff get acquainted with the new people and their functions. One staff member also suggested having personal leave records with history and entitlements. Similarly, several staff members suggested posting personal payment information and benefits. This would require logging into a section dedicated to each staff member, which requires a secure server and an interface with a database. Please

see the Technology section for further discussion of the secure server. The staff would also like to have access to policy documents, procedures, forms, department budget information, and program information so that they can find necessary documents quickly and easily. The staff also requested direct access to visitation statistics, upcoming staff functions, outlines of major projects, and online meeting bookings. Finally, the staff ranked a searchable archive of Zoo News and a posted work schedule as additional items they would like to see on the staff website.

Friends of the Zoos Section

Friends of the Zoos (FOTZ), the volunteer and donor organisation, represents a large population of individuals vested in the success of Zoos Victoria. The Zoos Victoria website is one avenue of advertisement for FOTZ and should be utilised. First, there should be a better explanation of membership and its benefits on the website so people do not have to download the membership form if they are not interested. The cover of the recent edition of "Zoo News", the FOTZ quarterly newsletter, should be available to view along with a featured article. This sample article will allow for a preview of one service that FOTZ offers its members.

The website should also be used to publicise FOTZ events, programs, and volunteer opportunities throughout the organisation. This advertising would increase the membership to FOTZ, which would in effect increase the donations to Zoos Victoria since 75 percent of membership dues are pledged to them. Also, the participation of both members and non-members will be augmented if more people know what the organisation is accomplishing.

Online Survey

While the website is in the process of being transformed, it is necessary to obtain users' opinions regarding the Zoos Victoria website. We suggest that the online survey have questions regarding the likes and dislikes of the Zoos Victoria website as well as other

questions to collect views of the website. In order to interest users in filling out the online survey, the participants' e-mail address should be entered into a drawing for a free trip to one of the zoos or zoo store souvenir. Using the information received through this survey, the Zoos Victoria website will continuously expand and be improved.

Message Board and Chat Room

Communication and interaction with users are very important to the success of the Zoos Victoria website. Two features that would improve both of these areas would be a message board and chat room. The message board would be a page in which users could post questions for keepers and other Zoos Victoria staff. The best method to go about this board would be to have all the three zoos linked through a common message board so there are a variety of experts to answer the questions pertaining to their area. If visitors have a question after their visit, then they can post the question on the board for someone to reply to and build upon the zoo experience.

The live chat room may be more difficult to implement due to the time and cooperation it would take Zoos Victoria staff to participate in and monitor the discussions. The best way to accomplish this task would be to have a few specific hours per day in which the keepers can sign up to sit at a computer and talk live to users. These two methods of "ask the keeper" will provide users the opportunity to find out first-hand information from the people who deal with the plants and animals on a day to day basis. As long as the staff is willing to spend some time responding to the questions posted, these features could benefit many visitors.

Partnerships and Links Page

A valuable resource to any user of the website would be a page containing a list of links. Our team recommends that the Zoos Victoria develop partnerships with organisations around the globe. The links page should contain zoological parks and aquaria websites from

all over the world. It should also contain other related sites such as wildlife rescue, educational requirements, environmental action groups, government initiatives, and any other relevant websites staff may use for reference. These links would be separated by section such as Government, Environmental, Zoological Organisations, etc. Lastly, staff should have the ability to post links to the website with prior approval from the webmaster. By forming partnerships with many plant and animal related organisations, Zoos Victoria will be able to increase the resources available to their staff as well as visitors to the site.

Aesthetics

One of the initial impressions a person has of a website is the appearance it displays. For this reason, the first recommendation our team is has regarding the aesthetics of the website is to make the site visually appealing. In the short term this means leaving the background and colour scheme in its current form with three separate backgrounds for each property. In the long term, when the site is redesigned to integrate the three properties better, a new background and colour scheme must be created to take into account the three properties. The background and colour scheme should also reflect the nature of the website. This recommendation comes directly from our findings of the usability test in which we noticed that more visually appealing sites were much more pleasing to the user.

Many other recommendations regarding the background and colour scheme also came from the usability test results. In order to convey the message that the whole site is one organisation and remind the user what site they are visiting, the background and colour scheme should remain constant throughout the site. Another recommendation is that the text colour and the background colours used should have enough contrast to allow the user to read the text easily. To this end, the colours used should be opposite on the colour wheel. An example of when this concept is not utilised is in Zoo News on each of the current three property homepages. The text here is very difficult to read and the message, therefore, rarely

comes across to the user. Along the same lines, we recommend that the background not extend behind the text unless it is a solid colour. This distraction can harm the user's ability to read the text. We suggest that the background colour scheme be designed to draw attention to the more important items on the page. For instance, the colours should attract the user to the major headings on the page and any other links that need to stand out. This method of highlighting can be accomplished in a number of ways, including the change in text colour when a mouse is moved over the selected material. Another way attain this effect is to make the heading colours very different from the background, thereby, setting them apart.

The final recommendation about general aesthetics is to make the font style and size easy to read. The staff identified font style and size as the fourth biggest problem they find with the website. By changing the font to one that is easier to read throughout the site, more users will be able to get the information they are looking for from the site. After making the changes reflected in the recommendations regarding the overall aesthetics of the website, the site will be more user friendly and more likely to convey the necessary information to the website visitor.

Graphics

Our first recommendation regarding the graphics of the website is to include more graphics on the site. As we noticed during our usability test and as teachers mentioned in our interviews, the site is lacking in graphics. Although there are animal pictures and a few pictures of the grounds, there are very little photographs that show visitors, keepers, plants, special events, possible function venues, classrooms, etc. If these illustrations were available, it is much more likely that people would be able to see themselves at the three properties for a range of reasons.

The usability test also shows that the graphics need to have captions or relevant text very near to the photo. For instance, if there is a photo but no text that relates it to the section the user is in, the graphic seems to have no purpose and is not useful to the user. Another recommendation that comes from the usability test is that the graphics should all have ALT text. ALT text is the text that is shown when a user's mouse is over the graphic or, more importantly, it is the text that is shown if the graphic does not load for some reason. All of these recommendations can be completed in both the short- and long-term timeframes to aid the user in understanding information as well as to give the user a sense of why they might visit one of the Zoos.

Headings

Two major recommendations regarding the headings on the website have come from information in the usability test. The first of these items is that the headings need to stand out on the page. We suggest putting the heading and the top left corner of the page instead of the top right as it currently is placed. This placement is preferred because the users who will be viewing this site likely speak English and, therefore, read from left to right and top to bottom. Another recommendation is to incorporate a logo, design, or other graphic that the user can associate with each heading. For instance, alongside the visitor services link, a graphic of a family comprised of stick figures might be appropriate. Once these changes have been made to the headings of the site, the Zoos Victoria website will be much easier for the user to navigate visually.

Navigation, Structure, and Layout

The ease of navigation of a website is essential for users to find what they are looking for as well as to enjoy the online experience. From the visitor survey we know that visitors feel navigation is very important as they ranked it the third most important aspect of a website. We also know from the staff perspective that navigation is the number one problem

on the current Zoos Victoria website. To remedy this problem, we suggest a number of small changes to the site in the short-term, with similar guidelines extending to the long-term redesign of the website. The first recommendation is to linearly arrange the navigation bar. Currently the website does not align the sections in the navigation bar, which is both confusing and distracting. In a similar manner, the headings should be in the same position on each page of the website. Currently the placement changes from page to page and can be quite distracting to the user. Next, we recommend the creation of an efficient search function complete with an advanced search feature. From results of the usability test, this aspect was determined to be important. By having the search function on every page, users will be able to navigate the site easily and quickly find the information for which they are looking. The advanced section should allow users to limit their search to all the key areas of the navigation bar, including the animal section (please see Appendix M for these sections). Also, the advance search should permit the use of multiple key words. Furthermore, to aid navigation we are recommending that a site map be developed to allow for more efficient navigation by the user. When all these recommendations are completed, the user will be able to navigate the site more efficiently.

Technology

Overall, our team is recommending that the technology of the Zoos Victoria website be improved. To begin, we recommend that a secure server be maintained on-site at one of the three properties. This permanent local server will remedy the problems associated with another company hosting the website as well as the problems involved in a for-profit sponsor company designing and making updates to the website. Placing a secure server on-site will allow for the possibilities of storing personal information on the website as well as the hosting of online commerce on the website. Altogether, the Zoos Victoria will greatly benefit from an on-site secure server.

Webcams, Video, & Sound

According to the staff, webcams are the second best thing about the website. The webcams also are consistently one of the top ten viewed sections of the site. However, according to visitors, they are the second least important aspect of a website. One possible reason for the visitors' perception is that they did not understand the word "webcams". A solution is to change the wording on the website from "webcams" to "see live animals". Another possible explanation for the visitors' views of webcams is that the resolution of webcams they have seen is poor and the updates infrequent. To solve this problem, we recommend better resolution webcams with faster connections to the Internet, as the budget will allow. Still another reason for the visitor's negative perception of the webcams is that the animals can only be viewed during certain hours. To remedy this problem we recommend that there be previously recorded footage for users visiting the site after normal viewing hours. This addition will make the site more internationally friendly and build upon the zoo experience through post-visitation viewing. In addition, we recommend placing webcams of the most popular animals at all three properties on the website so every visitor can continue exploring after their visit to any of the three facilities. Also, webcams should be placed on new exhibits, such as the upcoming Trail of the Elephants, to generate excitement about the attractions. These recommendations will help the website exploit the full potential of the webcams and can be performed in both the short- and long-term timeframes.

Along with the animal webcams and previously recorded video, there should also be video of keeper talks. Much like the additional graphics we suggested in the aesthetics section, these videos will help the users visualise themselves at the properties. We are recommending that each animal page have a "Listen to Me" link with sound recordings the animal. Along with the webcam improvements, these video and sound recommendations will

allow for more user interaction and increased interest in the happenings at the three properties.

Games

As we have discussed in the content section, the games on the website need to be interactive, cover a wide range of age levels, and contain large amounts of colour. The technical knowledge needed to create these games will depend on the type of game and its requirements. Therefore, we are recommending that for each game the developer determine the type of programming necessary. If the programmers do not have the knowledge to make the game, they should find out who else on the staff has the knowledge. In the case that none of the staff possesses the experience, then the game should be simplified or training must be obtained via courses or self-teaching books and methods. Should the budget not allow for materials or courses, then the development of the game should be postponed. In addition to creating games specifically for the Zoos Victoria website, the possibility of linking to other zoos' game pages should be explored. Through programming and partnerships with other sites, Zoos Victoria will be able to acquire interactive and colourful games that are appropriate for every age level.

Online Store

From the visitor survey analysis, it is clear that visitors feel an online store is the least important aspect of a website. Since the visitor's comfort level in making an online purchase with a credit card was below 50 percent, we recommend that the online store not be at this time. After the placement of a secure server on site, the capability to develop a store online is available for Zoos Victoria when deemed necessary. A probationary section of the website dedicated to online donations and ticket purchasing can set the groundwork for the online store when the users express a willingness to give personal information online. After the

population is comfortable with online donations and purchasing tickets online, the development of an online store will be easily performed.

Other Technologies

Since technology is very important to the success of a website, there are three more issues that need to be addressed. First, a mailing list of site visitors interested in receiving updates from the three properties needs to be created. The people who sign up for these updates should have complete confidentiality with no third party information being sent to this list. Visitors on this list should be able to sign-up via the homepage and receive updates on a regular basis about the upcoming events and the happenings at the three zoos. The second issue to address is the accommodation of disabled users. To accomplish this task the staff needs to review existing documents that discuss website design for the disabled. Lastly, we recommend displaying definitions of difficult terms when the mouse is moved over that term. This function will require Java programming of "roll-overs" that can also link to the glossary. All technologies discussed here can be developed for the short-term and integrated into the current site. However, if budgeting for a new site design materialises quickly, these technology issues can be addressed during the site redesign.

Integration of the Three Properties: A New Website Model

Defining major user groups or categories is an integral part of the website redesign process; it is imperative for a website to cater to its primary visitors. These defined groups are reflected in the choice of links found in the navigation bar. The Zoos Victoria website must satisfy the needs of a diverse audience since it is an educational and recreational facility. Based on the current website of Zoos Victoria and through our methodology our team has defined nine major user groups. These nine classes are primarily function-based rather than demographic-based and are listed in Table 11.

Table 11. User Groups

User Group	*Zoos Victoria Website Uses*
The Visitor	Directions; Admission times and prices; Interactive Zoo Map; Dining information; Special needs and services; Guided Tours
The Education Official	Student prices; Student programs; Education department contact information
The Information Seeker	Animal information; plant information (horticulture); Glossary of terms;
The Meeting Planner	Facilities: Wedding, Picnic, Corporate, Conference; Catering Information
The Child	Children's section
The Conservationist/ Researcher	Animal sponsorship; Current programs and projects
The Donator	FOTZ; Donation contact information
The Employment Seeker	Open full and part-time positions; Position descriptions; Resume submission; Volunteer Information
The Historian	Zoos Victoria history; Zoological Parks and Gardens Board history; History of each of the three properties
The Staff Member	General information; Department Information; Staff website

The agency's mission or vision must also be taken into account before website redesign. This will help to ensure that the website accurately reflects the agency. The Zoos Victoria's mission statement is for its zoos "to be world leading centres of wildlife and environmental education, conservation, and research, onsite, offsite, and online" (ZPGB, 2001). A new Zoos Victoria website must account for the emphasis placed on environmental education and conservation and reflect the physical efforts in these areas.

Taking into account the user groups and the mission, our team proposes that the Zoos Victoria website be redesigned so that the three properties are contained within one cohesive website. Currently, each property has its own unique navigation bar and background images. This impedes website usability and navigation between property sites. It can be argued that each property has a specific area of concentration that will be lost in a larger website. While compromises will certainly be made, our aim is not to merge the

three properties' identities but rather celebrate and accentuate both similarities and differences within a larger single framework.

The current website does not cater to its target audience. Our team believes that website integration will have resounding effects on ease of use and information distribution for all users. We will now discuss each group and how it will benefit from website integration.

The Visitor

The visitor user seeks basic zoo information and will benefit from not only integration but also consolidation. The Zoos Victoria website currently uses four separate navigation bar icons that this user would visit: admission times and prices, directions, zoo map, and services for visitors. These four categories should be combined under one visitor services heading since each pertain to information the zoo visitor needs or seeks. Integration may be implemented once visitor information sections become uniform through the three properties in the form of a visitor services section that compares similar information for each site. This comparison will help visitors to recognise the relationship between Melbourne Zoo, Healesville Sanctuary, and Victoria's Open Range Zoo (VORZ). It will also help visitors to decide which property to visit, based on estimated travel time, featured exhibits, and specific visitor needs. One may argue that visitors who are looking for specific property information will have more difficulty obtaining it with this comparative format. This could be avoided by providing a direct link to specific property information on the visitor services page in addition to the comparison chart. Both the visitor and Zoos Victoria would benefit from visitor services integration.

The Education Official

The education official is interested in obtaining information on school programs, prices, and any pre- or post-visit supplementary materials. This group would not benefit

from total integration for two reasons. First, teachers and other officials plan field trips based on proximity to the site and time constraints. Second, each property offers a unique education program centred on its strengths. However, each property's education section should be launched from one common page for ease of use. Since the Zoos Victoria homepage already offers this common launching point, we recommend that the structure remains the same.

The Information Seeker

The information seeker requires animal and plant information and therefore represents a wide array of demographic categories. Subsequently, these website sections must be designed to cater to different learning abilities and styles. This section is also extremely important to Zoos Victoria because it is the main method of the environmental education that the mission statement envisions. This section must be thoroughly developed, cohesive, and innovative in its education approach.

Since education of the public is the crux of this section, differentiation between properties is not important. Animals and plants from each property should be classified according to habitat and placed in a master directory located on the Zoos Victoria homepage. This would enable the user to access information pertaining to fauna and flora contained on any of the three properties from a single starting point. The user would also be receiving expert information gathered from experts at more than one property for animals that are located on more than one property such as the kangaroo or giraffe. Ownership of these animal and plant pages will inevitably become an issue as consolidation occurs. Ideally, staff workshops across the properties could be conducted to discuss and compose the educational material. These workshops need not be confined to groups with similar positions but could also involve diverse groups such as education, keepers, and curators. By allowing staff to become an integral part of the process, we believe a truly innovative

product will emerge. Another possible problem is that users will not be able to know at which property the animal or plant is located by integrating all sections according to habitat. This problem may be avoided by prominently displaying the logo of the properties at which the animal is located on the page with text that states where the species can be found.

The Meeting Planner

Similar to the property visitor, the meeting planner would benefit from facility comparisons between the three properties. Each zoo is located within a practical driving distance from one another and offer unique facilities and meeting opportunities. Furthermore, groups that hold conferences, meetings, or weddings typically have members living in wide array of geographical areas. By having a common page that compares facility size, price, operating hours, location, available staff, and catering options across the three properties, planners can find and book the facility that best fits the needs of their group. Our team foresees competition among special event organisers between properties to become an issue. Yet, we feel that this coordination should be extended beyond just the website; each facility offers unique experiences and should become more specialised in accordance with the property on which it is located. Another problem is the loss of identity, but as with visitor services, any special offerings should be highlighted rather than minimised within the integrated site. There should also be pictures or virtual tours of each facility.

The Child

The child group is the only user class that is composed of a specific demographic group and, therefore, has an unambiguous set of needs. The main purpose of this website section is education through interactive and engaging activities. Like the information seeker, the child is less interested in differentiation between properties and more interested in fun and worthwhile activities. Therefore, our team believes that a single children's

section should be developed that includes aspects of each property. This representation may be in the form of a game that brings children on a safari similar to those found at VORZ, or an interactive wombat found at Healesville. As described in our team's content recommendations, the basis of this section should be to build on the zoo experience. The section should be designed in such a manner as to prompt the child to want to physically visit the flora and fauna featured in the activities, so it will be necessary to place species ownership information. The design of this unified section will require careful planning and collaboration among a range of departments including the education departments and keeping staff across the properties, as well as the Information Technology department. A workshop will facilitate this collaboration, but task groups must also be formed due to the size of this undertaking.

The Conservationist/ Researcher

Similar to the Information Seeker, the conservation researcher seeks educational material. However, unlike the Seeker this user is also interested in implementation of conservation and research strategies. Examples of implementation currently found on the Zoos Victoria website include instructions on how to build a butterfly house and recycling instructions. This implementation section should be part of the conservation section because it both complements and supplements information currently described in conservation. Our team realises that the Conservation and Research department is involved in worldwide projects. We feel that these worldwide partnerships should continue to be featured in the conservation newsletter as well as article on the website.

The Donator

The donations and sponsorship sections of the website should be combined into one area since each attracts the same private or corporate user. The Zoos Victoria website currently does an excellent job of integrating donation and sponsorship between the three

properties. We believe that donation in the form of Friends of the Zoos (FOTZ) membership should also be included in the donation section since this organisation is active in all three properties. We suggest no major changes to the current section of this website but do recommend a material review and addition of any new programs of which we are unaware.

The Employment Seeker

The employment seeker group will benefit from property integration because it will allow the potential employee or volunteer to find the position that best suits his capabilities, time, and proximity to each location. Integration will also allow each property equal opportunity and access to job candidates. We also believe that this section should allow the job searcher to submit a résumé to Zoos Victoria. This will create a large database of potential employees that can be later utilised if a position does open for them. Ideally, these résumés would be kept in a database that would automatically inform the human resource department of qualified candidates for job openings.

The Historian

The history of each property and Zoos Victoria's governing board are unique and each deserves a dedicated page on the website. We recommend that a general Zoos Victoria History navigation link be established, which contains the history of the governing body and three properties' general role in Victoria. This general history should also include the mission and vision statement, which is not found on the current website. A prominent hotlink to each property's individual history should be found within the general history section. To integrate these separate histories would be to rob each property of its unique commencement story and how each has grown.

The Staff Member

We discovered through the staff survey that staff members use the Zoos Victoria website as a member of every other defined group and will undoubtedly benefit from integration. We foresee that staff will be resistant to a website revision because they use it on a regular basis and are therefore familiar with it. It will be necessary not only to convey the benefits of an integrated website but also to actively instruct them in initial navigation problems. These instructions could come in the form of a CD-ROM, IT workshops, or by training select individuals from each of the three properties and appointing them in charge of a pre-determined department or sector. The staff must feel comfortable with the proposed changes before they will be willing to participate in the content creation, so these instructions are essential.

Navigation Updates: A New Home Page Design

Taking all of these users and subsequent recommendations into consideration, our team devised a basic navigation bar that we feel will best serve both Zoos Victoria and the user in the conveyance of information. We designed the navigation bar according to the primary user's needs and the most visited sections according to available website visitation analysis. We decided the order of the sections based on what was used most often by website visitors and the section's relationship to other sections. This layout is to be viewed as a basic structure that merely covers topics essential to the Zoos Victoria website and allows for addition of links as Zoos Victoria feels necessary. Please see Appendix M for an ordered list of items to be included in the navigation bar.

Advertisement

We believe that website advertisement is an acute issue since only 18 of 156 visitors had viewed the Zoos Victoria website. In addition, nearly half of staff members cited using the Zoos Victoria website occasionally or never. Redevelopment of the website will not be

effective until both visitors and staff members regard the site as a primary source for flora and fauna education, conservation and research, and demographic-specific areas such as the children's section.

Our team recommends that Zoos Victoria begin to actively promote the website in all publications distributed to visitors by prominently displaying the website address on each document. We also suggest that Information Technology and Interpretation collaborate on an interactive display for an animal exhibit. This electronic sign should present pertinent educational material utilising a computer and monitor. The presentation or activity should be an excerpt from the website and this fact should be prominently displayed on the sign. The additional display will cater to those visitors who are visual learners as well as promote the website. In addition, we recommend that Zoos Victoria install several kiosks that feature an educational game or the entire website. These computer terminals will attract young visitors and augment website recognition. If no money is available for an interactive display, the website address should still be posted on all current zoo signs and there should be a permanent display highlighting new and exciting features. All signs could also include a question pertaining to the exhibit that could then be answered online. Additional exhibit information could become available when the participant answers the online question.

Staff should also be more exposed to the Zoos Victoria website. We recommend that the workshop designed to teach staff members about the new website design include a comprehensive review of material that is available on the website. We believe that staff members will use the website more often if they understand what is available and how to efficiently find this material. Furthermore, the staff will more regularly refer people to the website if they have a comprehensive knowledge of what the website contains.

Social Implications of our Project

Preservation of the ecosystem is an underlying theme in the Zoos Victoria mission and will be greatly augmented through visits to the website. It is Zoos Victoria's hope that people will become more environmentally conscious if educated about the environment; this correlation has been confirmed by our team while reviewing existing literature. Furthermore, Zoos Victoria wishes to use its website in conjunction with its physical properties to accomplish this increased environmental consciousness among visitors. Implementation of our team's recommendations to the Zoos Victoria website will result in a more thorough and interactive online educational experience for the user, which may translate into increased environmental awareness. In addition, by following our team's recommendations regarding website renovation and advertisement, Zoos Victoria will be able to convey its message of education and conservation more efficiently to a diverse audience.

This increased environmental awareness may encompass both local and global activity. Website visitors will be presented with practical conservation techniques such as recycling strategies and building a butterfly garden at home, and contact information for Australian and global environmental awareness groups. By updating content and efficiently presenting it, it is our team's hope that website visitors will remember and implement these techniques.

Future Research

This project is only the beginning of the long and detailed process of creating a new Zoos Victoria website. Our team has outlined several future research areas in our recommendations. Furthermore, we have identified four additional areas that must be addressed. These are assessment of result of the website survey, implementation of the updated usability test, creation of a more effective advertisement scheme, and the forming of educational partnerships.

We have developed a sample survey that can be posted on the Internet to gauge user demographics and opinions of the website. A copy of this website survey is available in Appendix N. Zoos Victoria should decide what type of incentive would attract users to fill out the online questionnaire. They must also decide whether to offer a regional-specific gift or a global one; the decision of prize offering will depend on the type of audience Zoos Victoria is trying to coerce to complete the survey. In addition, Zoos Victoria will need to develop and implement a survey analysis scheme once enough samples are collected. Finally, this survey should then be adapted into a user feedback form once the improvements to the website have been made.

Our team has also developed a revised usability test that is to be applied to the renovated Zoos Victoria website. A copy of this usability test is available in Appendix O. The usability test undoubtedly will not cover all areas and so it will be necessary to modify the document as website redevelopment occurs. We created this test to be a viable starting point rather than a static document for website analysis

Our team believes that a thorough assessment of the current website advertisement scheme must be conducted and reformed. Efficient advertisement of the website would greatly increase visitors to the Zoos Victoria website. The marketing and visitor services departments should research different methods of website publicity, then collaborate with the website designers to create a comprehensive plan.

Finally, Zoos Victoria should investigate the possibility of forming educational partnerships with local and global zoos, parks, and aquariums. These partnerships will allow for a wide array of educational material to be available from a single starting point. Internet partnerships will also pave the way for increased collaboration between facilities in other areas and create a more unified approach towards environmental education.

Appendix A: Zoological Parks and Gardens Board

The Melbourne Zoo was founded in 1862, under the direction of the Zoological Society of Victoria. Originally designed as a domestic animal acclimatization area, the zoo began collecting unique species from around the world beginning in the 1880's. These animals included species such as the elephant, zebra, and giraffe. Over the next century, the Melbourne Zoo acquired many unique animals, constructed permanent enclosures, and developed programs for captive breeding of endangered species. In the 1980's, the Zoo developed and implemented a master plan to divide the grounds into three bioclimatic zones, and furthered the Zoo's regional conservation and education efforts through additional activity programming.

Several agencies have overseen the Zoo since its inception. Zoo leadership was transferred to the Zoological Board of Victoria in 1937, created in 1936. The Zoological Board was responsible for the creation of Victoria's Open Range Zoo at Werribee in 1975, and the Healesville Sanctuary, formed in 1978. Together, these three conservation areas are known as Victoria's Three Great Zoos. Currently, the Zoos are led by the Zoological Parks and Gardens Board, established in 1996.

Table 12 shows the financial summary for the ZPGB for the fiscal year of 2000-01. As the table shows, there is an increase in both inflow and outflow of funds indicating a growth in the organisation. There is also an increase in government grants over the past three years.

Table 12. ZPGB Financial Summary - 2001

Details	2000-01 AUD	1999-00 AUD	1998-99 AUD	1997-98 AUD
Income				
Admission	13,003,000	13,214,000	12,868,000	12,075,000
Government Grant – Recurrent	8,238,000	6,496,000	6,446,000	5,618,000
Government Grant – Capital	1,210,000	306,000	147,000	970,000
Donations	1,726,000	965,000	1,006,000	1,504,000
Other Income	7,243,000	5,961,000	6,163,000	4,754,000
Total Funds Inflows	31,420,000	26,942,000	26,630,000	24,921,000
Expenses				
Wages & Employment Costs	17,804,000	16,373,000	15,780,000	15,156,000
Depreciation	2,643,000	1,921,000	1,751,000	1,624,000
Other Expenses	10,519,000	8,291,00	7,658,000	7,201,000
Total Fund Outflows	30,966,000	26,590,000	25,189,000	23,981,000
Operating Surplus	454,000	357,000	1,441,000	940,000

***Source*: Zoological Parks and Gardens Board. (2001). Annual Report. Victoria, Australia: Braemar Graphic Reproductions.**

Overall, Zoos Victoria staffs 317 full-time employees between the three physical zoo properties. Table 13 shows the number of staff and their corresponding location.

Table 13. Table of Equivalent Full Time Staff Numbers

Property	**1999-2000**	**2000-2001**
Corporate	25	28
Melbourne Zoo	156	156
Healesville Sanctuary	67	67
VORZ	46	46
Subtotal	294	297
Casuals	20	20
Total	314	317

***Source*: Zoological Parks and Gardens Board. (2001). Annual Report. Victoria, Australia: Braemar Graphic Reproductions.**

Figure 57 shows the organisational chart for the executive management of Zoos Victoria.

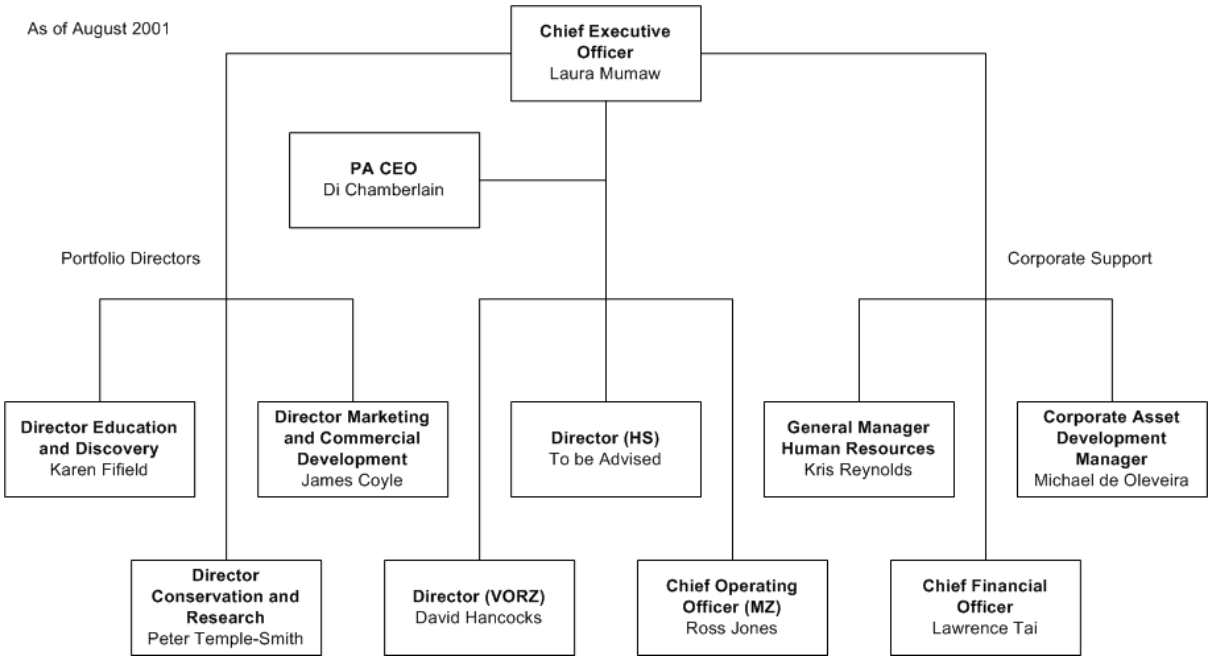

Figure 57. Executive Management Organisational Chart (ZPGB, 2001)

Figure 58 shows the organisational chart for the Department of Discovery and Learning in the Melbourne Zoo. Our liaison, Jennifer Aughterson, is part of the Department of Discovery and Learning under Karen Fifield's direction. The numbers in parentheses indicate the number of employees within each hierarchy branch. Table 14 shows the trend of decreased visitation at the three properties.

Table 14. 2000-01 Visitation by Property - 2001

	Normal '000	After Hours '000	Total '000
Melbourne Zoo			
2000	867	63	951
2001	846	58	904
Healesville Sanctuary			
2000	347	3	351
2001	319	0	319
Victoria Open Range Zoo at Werribee			
2000	199	10	209
2001	188	12	200

Total			
2000	1,413	76	1,511
2001	1,353	70	1,423

***Source*: Zoological Parks and Gardens Board. (2001). <u>Annual Report.</u> Victoria, Australia: Braemar Graphic Reproductions.**

In light of declining admissions, the ZPGB has recently applied for a government grant to improve and develop its physical infrastructure. A portion of this proposal is dedicated to the new Learning Technology Strategy, which includes upgrading the website to interest new audiences and building on the zoo experience.

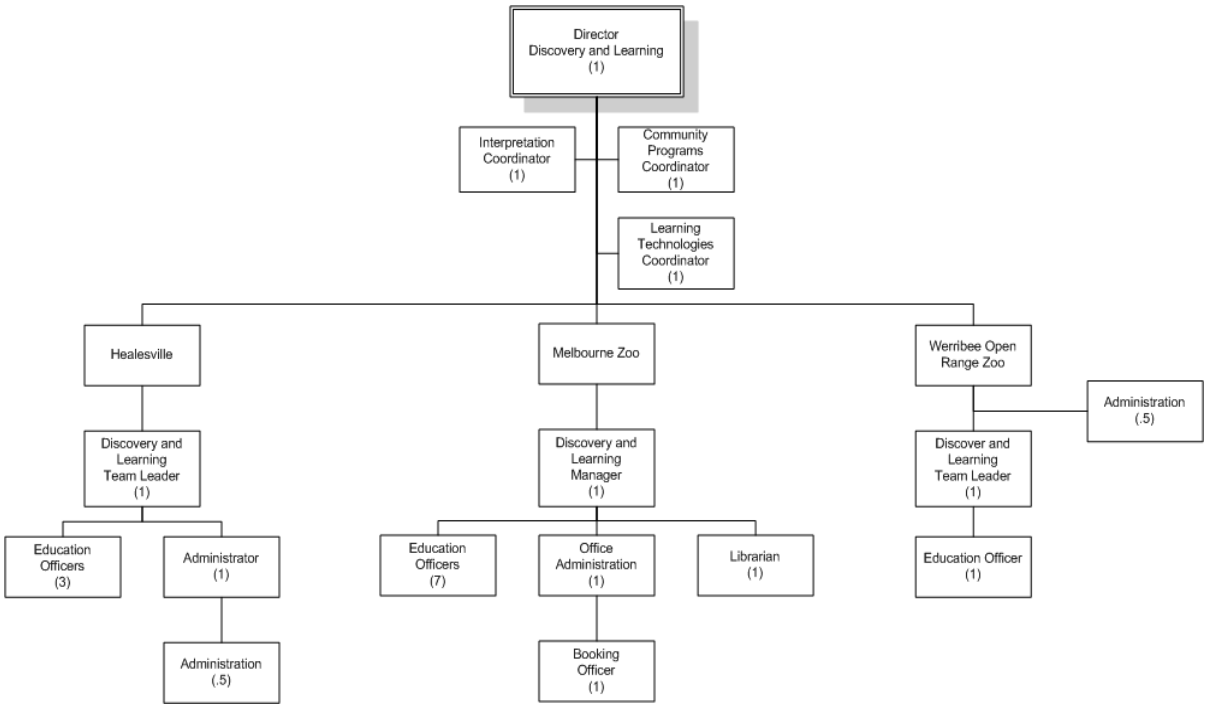

Figure 58. Discovery and Learning Department Organisational Chart (ZPGB, 2001)

Appendix B: Methodology Theory

The standardised interview consists of a permanent set of questions so that the answers may be easily compared. The advantage of this type of interview is that it enables the interviewer to analyse responses to relatively similar stimuli. One disadvantage of this type of interview is that it is not flexible. It does not allow expansion upon responses to questions or allow the interviewer to modify the questions according to the subject at hand (Berg, 2001).

The semi-standardised interview involves predetermined questions but allows the freedom to explore relevant areas outside the survey. The advantage is that this allows more personal opinions to enter the interview. The disadvantage to this type of interview is that the researcher cannot fully compare interview results unless no digression occurs (Berg, 2001).

Written questionnaires are used to ascertain a group or population's opinion when the entire population of interest is known. Questionnaires may consist of both multiple choice and open-ended responses. An advantage of this data collection method is that the results are often quantitative and easy to analyse using SPSS. However, questionnaires have two distinct disadvantages. First, a written questionnaire will not elicit any information unless explicitly or implicitly requested. This may be minimized through the generous use of open-ended questions and a request for extra comments. Another disadvantage is the inability to modify confusing or objectionable queries once the questionnaire has been administered (Salant & Dillman, 1994). Careful and thorough pre-testing will help reduce this drawback.

Face-to-face surveying is asking a group or sample of people a set of questions having definitive answers to determine something about the group. One advantage of this data gathering method is that the results can be quantitative and easy to analyse. In addition, the method makes it possible to survey populations for whom there is no list. One disadvantage of this method is that the researcher cannot gather any information in addition to survey answers. Another disadvantage is that this method is very time and labour intensive (Berg, 2001). Also, determining who is of adult age is somewhat arbitrary which will introduce bias.

Purposive sampling is the method of sampling in which responses from targeted groups are solicited so as to obtain their opinions, which may not otherwise be accurately represented through random sampling. One advantage is that results from desired populations are attained. One disadvantage of this type of sampling is that the researcher may introduce bias by selecting a particular group. Also, the researcher may not consider all subsets of the population that are relevant to the study (Berg, 2001).

Systematic sampling is the method in which a sample size is determined based on the population quantity. Interviewing every "nth" person then provides a large enough group to accurately portray the responses of the population. An advantage to this type of sampling is that selection bias is eliminated. One disadvantage of this type of sampling is that the study may not include a representative portion of all subsets of the entire population (Berg, 2001). Therefore, purposive systematic sampling involves choosing every "nth" person in a targeted group.

Content analysis is a method in which the underlying meaning of an interview can be determined through systematic evaluation. In content analysis, words, paragraphs,

characters, themes, items, concepts, and semantics are counted and valued. Before interview commencement, a specific coding scheme is developed. This process allows for quantitative comparison between standardized interviews (Berg, 2001).

Appendix C: Usability Design Steps

- Selecting an Order-Independent Process
- Setting up usability goals
- Profiling the user classes
- Identifying mental models
- Developing storyboards
- Developing site maps
- Selecting good test tasks
- Performing early usability testing
- Measuring each usability attribute
- Assessing if usability goals have been met
- Repeating the process, using iterative refinement

Appendix D: First Revision of Usability Test

Beginning at the home page, find the following areas of the website without the use of a search feature. The numbers in the parentheses are the weightings given to each area depending on its significance. A weighting of one is least important and three is most important. Record the time (in seconds) it takes to find each area.

1) Current exhibits (3)
2) Admission times and prices (3)
3) School programs (2)
4) Directions (3)
5) Games/Children's section (3)
6) Contact information (2)
7) Donations (2)
8) Employment and Volunteer Opportunities (2)
9) Purchasing a t-shirt (1)
10) Upcoming Events (1)

After finishing the above tasks, return to the homepage and explore the site. Once you feel comfortable with the layout and site purpose, answer these questions in Table 15, on a scale from one to three. A score of zero should be given if the site does not feature the attribute. Each attribute is weighted from one to three based on its importance.

Table 15. Usability Test Questions

Analysis Categories:	**Weighting**
1) Content	
a) General	
i) Is there a Glossary?	1
ii) Is there a List of Abbreviations?	1
iii) Is the date of last update or creation provided on homepage?	1
iv) Does the site contain a statement of purpose?	1
v) Are acronyms described before being used?	1
vi) Do the graphics flow with the text?	1
b) Useful/Informative Content	
i) How useful do you find the site's content?	2
ii) Are people and organisation contact details provided for the website?	1
iii) Is new information indicated?	1
iv) Is a set of Frequently Asked Questions included?	1
c) Spelling/Grammar/Writing	

i) Does the textual content use correct spellings?	1
ii) Does the textual content use correct grammar?	1
iii) How do you rate the standard of writing on this website?	1
d) Hyperlinks	
i) Are the site's hyperlinks functioning?	2
ii) Are there links to other websites?	1
2) Aesthetics	
a) General	
i) Is the website's look consistent?	2
ii) Is the general look of the website visually appealing?	2
iii) Do headings stand out on the page?	1
iv) Are tables and figures aligned correctly?	1
v) Is white space used effectively?	1
b) Colour/Contrast	
i.) Is the text easy to read? (High Contrast is preferred)	2
ii.) Do the colours draw attention to the most important items?	1
iii.) Does the colour scheme appeal to the reader?	1
iv.) Does the website facilitate use by red-green colour-blind users?	1
c) Font & Font Size	
i) Is the formatting of text consistent?	1
ii) Is text left justified?	1
iii) Is the font easy to read?	2
d) Graphics	
i) Do the graphics blend with the overall theme and look of the webpage?	1
ii) Do the graphics have captions or related articles that allow for easy interpretation?	1
iii) Do the graphics have ALT text?	1
iv) Are the graphics reasonable in file size?	1
v) Are the graphics reasonable in display size?	1
3) Structure/Layout	
a) Clear	
i) Are headings parallel?	1
ii) Are headings brief and informative?	1
iii) Is there at least one heading on each page?	1
iv) Do major topics begin on separate pages?	1
b) Hyperlinks	
i) Can the visitors reach the homepage from any page?	2
c) Site Map	
i) Is there a site map?	3
ii) Is the site map useful?	1
d) Navigation	
i) Can the visitors in one section move to another without returning to the homepage?	1
ii) Rate the site on navigation.	3
e) Homepage	

i) Is it immediately clear what organisation's website you are on?	2
ii) Is the logo in the top left corner?	1
iii) Is the load time for the homepage excessive?	2
4) Technology	
a) Webcams/Video	
i) How is the video resolution?	1
ii) How is the audio resolution?	1
iii) Is previous footage of the animals available for after hours display?	1
b) Games	
i) Are there educational games?	2
ii) Are the games interactive?	2
iii) Do the games cover a wide range of age groups?	1
iv) What quality are the games?	2
v) Do the games have colour?	1
c) Connection Speed	
i) Do all the pages load in a reasonable amount of time?	3
5) Misc	
i) Is there an e-mail newsletter on a regular basis?	1
ii) Is there a search feature?	2
iii) Is the search feature useful?	2
b) Ease of Finding Site	
i) Does the website address make sense to the user?	1
ii) Can the website be found by searching for the name or type of business with a major search engine?	1
c) Browser Compatibility	
i) Is the website compatible with popular browsers (Internet Explorer, Netscape)?	2
d) User Feedback	
i) Is it easy for the user to provide feedback?	2
ii) Is there a user survey?	1
iii) Is there webmaster contact information with a mailto: link?	1
6) Other Comments (no ranking numbers)	
a) What formats can documents be downloaded?	
b) If the pages do not load quickly, is there a page explaining the delay?	

In order to calculate an individual evaluator's score, the timed section and questions section are summed. To find the result for an individual zoo within each area of the timed section, the lowest score is subtracted from each zoo's score. That number is then divided by the difference between the highest and the lowest scores. The normalized number is then multiplied by the weighting to give the full amount of the

timed section. To find the total for the questions section, multiply the score by the weighting number. Then, sum all the adjusted scores to give the total for the questions section. Finally, add the result from the timed section and the product from the questions section.

Appendix E: Teacher Interview Schedule

1.) Do you have access to the Internet? (If no, Skip to question 16)
2.) Where do you have access to the Internet?
3.) How many computers with access to the Internet can your class use?
4.) How often can your class use those computers?
5.) What plans are there regarding Internet access in the school?
6.) Have you visited Zoos Victoria's website?

If the answer is 'Yes':

7.) Why have you visited the website?
8.) What specific features do you like about the website?
9.) What specific features do you dislike about the website?
10.) What do you specifically like about the content of the website?
11.) What do you specifically dislike about the content of the website?
12.) How easy is it to find what you are looking for?
13.) Have you ever used resources from the website in your classroom?
14.) Do you recommend to your students the Zoos Victoria website as a source of information?

If the answer is 'No':

15.) Why haven't you visited the website?

All:

16.) What would you want to find at the website regarding:
   a) Education?
   b) Animals?
   c) Plants?
   d) Other? Please state.
17.) Have you ever used online resources in your classroom? (What & How)
18.) Have you ever used resources from the Discovery and Learning section in your classroom? (What & How)
19.) Do you give assignments utilising the web? (What & How)
20.) Do you give assignments pertaining to animals? (What & How)
21.) What method of teaching do you find most successful?
22.) What types of educational games do you feel are helpful in teaching students? (cross-words, matching, etc.)
23.) Do you think there should be a section of the website written for children?
24.) Would you be interested in online professional development resources?
25.) Would you be interested in online professional development learning?

If yes:
26.) If you would be interested, would you be willing to pay for these services?

Appendix F: Friends of the Zoos Interview Schedule

SET UP QUESTIONS IMPROVISED
DISCUSS CONFIDENTIALITY
DISCUSS PURPOSE OF INTERVIEW

1.) Do you have access to the Internet?
YES NO

2.) Have you visited Zoos Victoria's website?

If the answer is 'Yes':

3.) Why have you visited the website?
4.) What specific features do you like about the website?
5.) What specific features do you dislike about the website?
6.) What do you specifically like about the content of the website?
7.) What do you specifically dislike about the content of the website?
8.) How easy is it to find what you are looking for?

If the answer is 'No':

9.) Why would you visit the website?

All:

10.) How often do you volunteer for the zoo?
11.) If you volunteer, what are your responsibilities?
12.) If the FOTZ member portion of the website were further developed, what would you like to see on it?
13.) Would you be interested in receiving FOTZ Zoo News via email?

Appendix G: Zoos Victoria Staff Questionnaire

Opinions on Zoos Victoria Website:

A Survey of Staff Members

Please fold, staple, and return your
completed questionnaire
by **Wednesday, April 17** to:

Jeffrey Savard Jennifer Scheipers Christina Watson

Department of Discovery and Learning

❖

Education Resource Centre
Melbourne Zoo

All responses to this questionnaire are completely confidential and voluntary.

Reader's Note: This is not the format in which staff received the questionnaire. Short answer spaces have been eliminated in an effort to save paper.

Q1 **Do you have access to the Internet?** *(Circle one choice).*

Q1A **at home?**	Q1B **at work?**
1. Yes	1. Yes
2. No	2. No

Q2 **How often do you visit the Zoos Victoria website?**

1. Daily
2. Weekly
3. Occasionally
4. Never (If you answered never, proceed to Q9)

Q3 **How easy was it to find what you were looking for?** *(Circle choice).*

1. Very Easy
2. Easy
3. Average
4. Difficult
5. Very Difficult

For questions 4-8, please circle all answers that apply. If more space is needed, proceed to the back page of the survey, or attach an additional sheet of paper.

Q4 **Why have you visited the Zoos Victoria website?**

1. Flora and Fauna Information
2. General Zoo Information
3. Department Information
4. Educational Programs
5. Research and Conservation

Other _____

Q5 **What did you like about the structure of the Zoos Victoria website?**

1. Navigation
2. Layout and Colour
3. Font Style and Size
4. Integration of the Three Properties
5. Animal Search Function
6. Interactivity

Other _____

Q6 **What did you dislike about the structure of the Zoos Victoria website?**

1. Navigation
2. Layout and Colour
3. Font Style and Size
4. Integration of the Three Properties
5. Animal Search Function
6. Interactivity

Other _____

Q7 **What did you like about the content of the Zoos Victoria website?**

1. Accuracy of Information
2. Writing Style
3. Graphics
4. External Hotlinks
5. Animal Fact Sheets
6. Webcams
7. E-Cards

Other _____

Q8 **What did you dislike about the content of the Zoos Victoria website?**

1. Accuracy of Information
2. Writing Style
3. Graphics
4. External Hotlinks
5. Animal Fact Sheets
6. Webcams
7. E-Cards

Other _____

Q9 **What is your current position and department? (*OPTIONAL).***

POSITION: _____

DEPARTMENT: _____

Q10 **Does your department have a section on the Zoos Victoria website?**

1. YES
2. NO If you answered NO, skip to **Q14**.

Q11 **To what extent are you satisfied with your department's representation on the Zoos Victoria website?**

1. Very Satisfied
2. Somewhat Satisfied
3. Somewhat Dissatisfied
4. Very Dissatisfied

Q12 **What do you think can be done to improve your department's section of the website?** *(Please provide a short answer).*

Q13 **One goal of the improved website is greater interaction with the user. Do you have any project, activity, or game ideas for users to complete online that will stimulate their interest in your department or the zoos?** *(Please provide a short answer).*

Q14 **Please recommend any good online resources for your area of expertise.**

Q15 **How often do you use the staff website?**

1. Daily
2. Weekly
3. Occasionally
4. Never

Q16 **What information or functions would you like to see on the staff website?** *(Circle all that apply).*

1. Work Schedules
2. Searchable Staff Directory
3. Archived Zoo News
4. Personal Payment History via Password

Other _____

Additional comments were accepted on either the back page of the questionnaire or an attached sheet.

Appendix H: Melbourne Zoo Visitor Survey

Opinions on Zoos Victoria Website:

A Survey of Visitors

Dear Visitor:

Thank you for visiting the Melbourne Zoo and taking a few moments to answer our questions. The Department of Discovery and Learning is conducting a survey on adult visitor's perception of the Zoos Victoria website, and the Internet as an educational resource. We ensure you that your participation in this survey is completely voluntary, and all answers will be held confidential. At no time will you be asked to provide personal or sensitive information. However, in order to gather a complete impression of your internet activities, it is important that you try to answer all of the questions. If you want to receive survey results, please let us know at the end of the survey and we will give you the address from which to request the information. Once again, thank you for your participation.

During the survey, you will be asked a series of multiple choice questions. Each question will have a specific set of instructions, which will be provided to you. You will also be allowed to view a laminated index card that will contain all answer choices. Remember that no answer is right or wrong. Please hold any questions until after I am finished conducting the survey. If there are no questions, let's begin.

Q1 **Why are you visiting the zoo today?** *(Circle all that apply).*

1. Bringing children
2. Specific attraction: *(Which attraction?)*
3. Organized group outing
4. Personal enjoyment
5. Other: *(Please provide answer)*

Q2 **Do you have access to the Internet?** *(Circle one choice).*

1. YES
2. NO

Q3 **Have you visited the Zoo's website?**

1. YES
2. NO If NO, skip to Q8

Q4 **How easy was it to find what you were looking for?** *(Circle choice).*

1. Very Easy
2. Easy
3. Average

4. Difficult
5. Very Difficult

Q5 **Why have you visited the Zoo's website?** *(Circle all that apply).*

1. Directions
2. Admissions Time and Price
3. Education Programs
4. Plant and Animal Information
5. Donations
6. Research and Conservation
7. Volunteer Opportunities
8. Employment
9. Webcams
10. E-cards
11. Current Exhibits
12. Other: *(Please provide answer)*

Q6 **What improvements would you like to see to the website?** *(Circle all that apply).*

1. Navigation
2. Visual Appeal
3. Greater Interaction
4. Addition of Children's Section
5. Addition of Teenager's Section
6. Chat rooms
7. Webcams
8. Addition of Online Zoo Store
9. Automated Donation Sheet
10. More Detailed Animal and Plant Information
11. Hotlinks to other educational websites
12. Other: *(Please provide answer)*

Q7 **Would you feel comfortable performing the following tasks on a website?** *(Answer YES or NO for each number).*

1. Purchasing Admission Tickets
2. Making a Donation
3. Logging in to a Members-Only site containing personal information such as full name and address
4. Purchasing an item online with a credit card
5. Participating in an online survey

Q8 **What do you feel are the most important aspects of a website?** *(Circle all that apply)*

1. Navigation
2. Visual Appeal
3. Interaction
4. Interesting Activities
5. Children's Section
6. Teenager's Section
7. Webcams
8. Online Shopping
9. Donation Section
10. Animal and Plant Information
11. Upcoming Events
12. Other: *(Please provide answer)*

Q9 **What do you feel are the least important aspects of a website?** *(Circle all that apply).*

1. Navigation
2. Visual Appeal
3. Interaction
4. Interesting Activities
5. Children's Section
6. Teenager's Section
7. Webcams
8. Online Shopping
9. Donation Section
10. Animal and Plant Information
11. Upcoming Events
12. Other: (Please provide answer)

Thank you for completing our survey!

If you desire a copy of the results of this survey, please send a self-addressed stamped envelope and a letter of request to:

Royal Melbourne Zoological Gardens
Department of Discovery and Learning
Elliott Avenue
Parkville, VIC 3052

Appendix I: Melbourne Zoo Map

Survey points one and two are highlighted in red on the Melbourne Zoo map shown in Figure 59. Survey point one was at the main Zoo entrance while survey point two was at the railway entrance. These two places are the only possible Zoo visitor entrance points, which allowed for a true systematic sample. Two people were stationed at point one from 9:30 to 11:30 AM while one person concurrently surveyed at point two. Surveying occurred every day from Monday, April 08 to Friday, April 12.

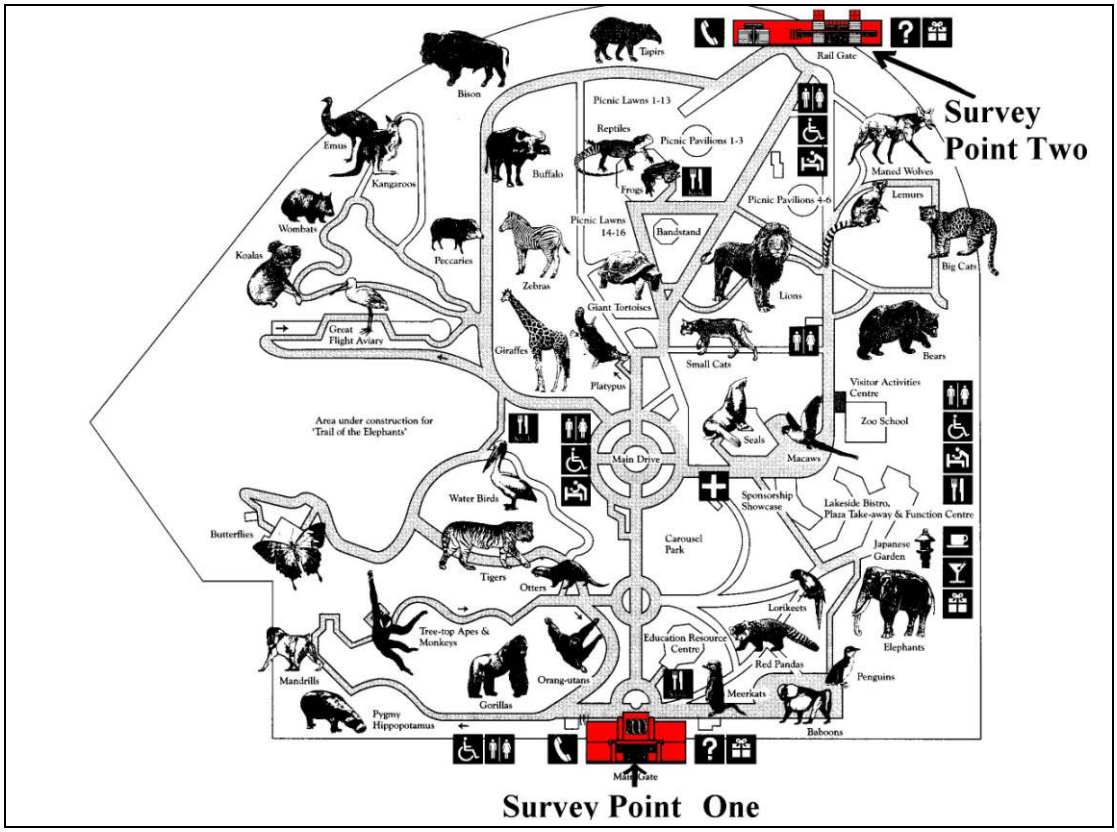

Figure 59. Zoo Map with Survey Points

Appendix J: Task Chart

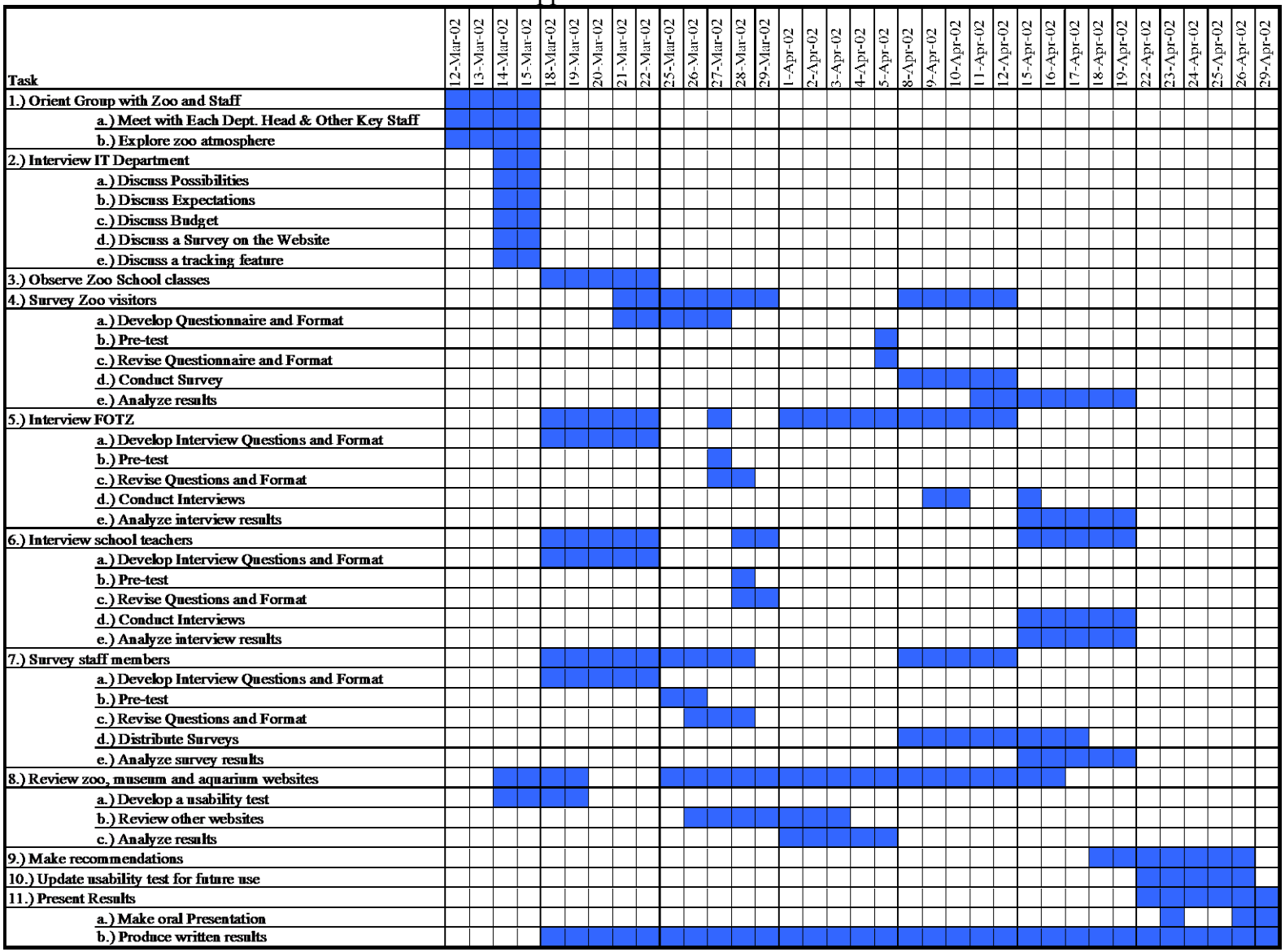

Figure 60. Task Chart

Appendix K: Pert Chart

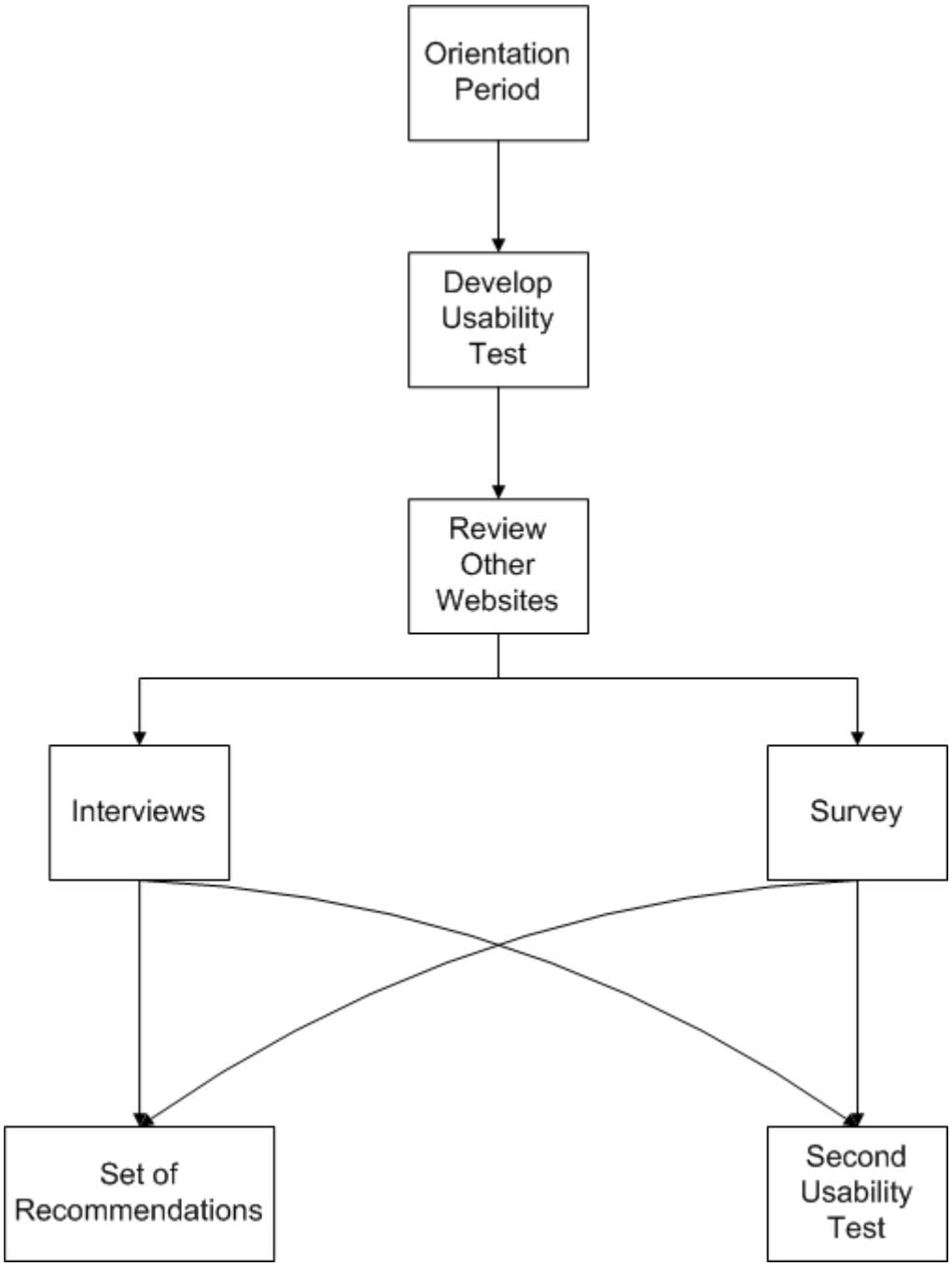

Figure 61. Pert Chart

Appendix L: Recommendations

Content

- General Content
    - Create a glossary of difficult or uncommon words, zoological jargon, or abbreviations
    - Compose a list of frequently asked questions if deemed necessary by visitor services
    - Scan in clearer maps of Melbourne Zoo, Healesville Sanctuary and Victoria's Open Range Zoo
    - Feature an article and picture on the Zoos Victoria homepage about recent events and accomplishments at the Zoos
    - Offer contact information for specific departments and employees under a "contact us" section
    - Construct a feedback form to elicit opinions of website visitors
    - Maintain a hotlink at the bottom of every page that links to the webmaster
- Detailed and Accurate Information
    - Review and update the factual information in all sections of the website
    - Display the date of creation on every page
    - Show date of last update on each page
    - Illustrate a recent addition with a prompt such as, "NEW!"
- Animal and Plant Information
    - Design electronic cards for every animal and plant
    - Create plant fact sheets
    - Expand information about every habitat
    - Alter animal fact sheets

        - Make available in HTML, with a link to a “printer friendly version” in PDF format
        - Present quick or unusual facts as well as detailed information
- Education
    - Expand and enhance descriptions of zoo school lessons, include pictures
    - Acquire a secure server
        - Generate a bookings form online for zoo school programs, which can be extended to tours, camps and function rooms.
        - Using a login name and password, allow registered teachers to access zoo school handouts online
        - Develop online professional development resources and classes for teachers
- Children’s section
    - Establish a section specifically for children, with a direct link from the homepage
    - Utilize vibrant colours and an interesting layout; this section should have a different design from the rest of the website
    - Construct interactive, colourful games for all ages that engage the user while teaching valuable wildlife information
    - Separate the children’s section according to age level and complexity
    - Have links from the children’s section to the education department and animal and plant information
- Departmental Representation
    - Assure that every department has equal representation by allowing each department to design its own page; within certain limitations

    - Provide contact information, such as email, for amenable employees
- Staff Website (using a secure server linked to a database)
    - Create a searchable staff directory
        - Supply a photo of each staff member, a brief job description, their location, and email
        - Highlight the new staff members when they are hired
    - Make the following staff features available online:
        - personal leave records
        - Personal payment information and benefits
        - Policy documents, procedures, forms, department budget information, program information
        - Work schedule
    - Develop a searchable archive of Zoo News
- Friends of the Zoos Section
    - Include a better explanation of membership and its benefits
    - Display the cover of the most recent "Zoo News" and featured article
    - Publicize FOTZ events, programs and volunteer opportunities
- Online Survey
    - Make a short-term online survey to gauge opinions regarding different aspects of the website
    - Provide an incentive for users to fill out the website survey
- Message Board and Chat Room
    - Construct a message board
        - Allow users to post questions regarding any aspect of the Zoos Victoria and wildlife

        - Link all three zoos through one message board
    - Create a “meet the keeper” live chat room
        - Arrange specific times keepers are available to manage the chat room
- Partnerships and Links Page
    - Develop partnerships with animal and plant related organizations
    - Build a list of links that can be used for reference; some examples are:
        - Environmental action groups
        - Educational requirements
        - Zoological parks and aquaria
        - Government initiatives
        - Wildlife rescue

<u>Aesthetics</u>

- Make site more visually appealing
    - Short-term:
        - Keep existing background & colour scheme
    - Long-term
        - Change background & colour scheme to further integrate three properties
        - Reflect the nature of website in colour scheme should reflect
        - Maintain a consistent look throughout site
        - Make contrast of text and background sufficient
            - Use colours that are opposite on colour wheel
        - Choose a background that does not have designs behind text
        - Use colours to draw attention to major items
        - Improve font style and size

- Graphics
    - Include more graphics & pictures
        - Select graphics depicting properties and people at properties:
            - Action pictures of visitors
            - Photos of keepers during daily routines
            - Plants photos
            - Special event pictures
            - Photographs of possible function venues
            - Classrooms pictures
    - Incorporate captions or relevant text with graphics
    - Integrate ALT text for graphics
- Headings
    - Make headings stand out on page
        - Put headings at top left of page
    - Incorporate something to attract user's attention to heading (logo, design, graphic, etc.)

<u>Navigation, Structure & Layout</u>

- General navigation
    - Align navigation bar linearly
    - Position headings similarly from page to page
    - Develop efficient and advanced search function
        - Include search function on every page
        - Construct advanced search function that allows limiting search to certain sections in navigation bar, including animals
    - Create and implement site map

Technology

- Secure Server
    - Allows possibility of storing personal information on website
    - Permits option of online commerce
- Webcams, Video, & Sound
    - Change wording from "webcams" to "see live animals"
    - Increase webcams resolution and speed as budget allows
    - Include recorded footage for users to view outside normal operating hours
    - Place webcams on most popular animals at all three properties
    - Record video of keepers going though daily routine, people visiting properties, etc.
    - Make "listen to me" links for all animal pages
- Games
    - Determine what programming skills to use for each game individually
    - Explore partnerships with other zoos' games pages
- Online store
    - Do not develop an online store yet
        - Willingness of population to using a credit card online is low
    - Develop online donations and e-tickets first
        - Set-up credit card processing and database for online commerce
- Other Technologies
    - Create mailing list for user to receive upcoming events and regular updates on the happenings at the three zoos
    - Make site accommodate disabled
    - Develop Java "mouse-overs" of difficult words in text

Integration

- Initial integration steps
    - Define primary user groups
        - The visitor planning a Zoo trip
        - The education official planning a school outing
        - The information seeker looking for animal and plant information
        - The meeting planner looking for details of available facilities
        - The child looking for online interactive activities
        - The conservation researcher looking for current zoo programs
        - The donator looking to give money or sponsor an animal
        - The employment seeker looking for paid or volunteer work
        - The historian looking for Zoos Victoria historical data
        - The staff member using all aspects of the website
    - Establish purpose of website within confines of mission statement
- Section Revisions
    - Visitor services
        - Combine admission information and directions to all three properties into one document
    - Education
        - Maintain current section structure
    - Animal and Plant Information
        - Eliminate species differentiation between properties
        - Group flora and fauna according to habitat rather than property
        - Display where species is located graphically
        - Allow searching for animal by habitat or alphabetically

        - Involve staff in content writing
        - Conduct staff workshops to facilitate cooperation among properties
    - Meetings and Functions
        - Consolidate all facility information into one cohesive document
        - Highlight strengths and unique aspects of each property's facilities
        - Arrange for collaboration between special function managers at each property
    - Conservation and Research
        - Maintain current integrated structure
        - Include "Caring for Wildlife" section in Conservation/Research
        - Feature worldwide partnerships and individual staff projects
    - Donations
        - Combine donation and sponsorship into one section
        - Incorporate FOTZ website into this section
        - Consider an automated donation page when secure server is in place
    - Employment and Volunteer Services
        - List job openings for all three properties in one area
        - Place all volunteer information for all three properties in separate area
        - Establish database for online resume submission
    - Zoos Victoria history
        - Revise and lengthen history of Zoos Victoria's governing body
        - Position each property's history in separate file available from the common Zoos Victoria history section
- Staff participation
    - Conduct staff workshops to introduce proposed redesign

- Instruct staff on how to use new website design via CD-ROM or face to face training
- Assign content writing to specific staff task groups

Advertisement

- Analyse all existing forms of website advertisement
- Promote the website in each property
  - Develop interactive signs that use technology to educate
  - Include the website address on all current signs
  - Create an independent sign dedicated to website news
  - Construct internet activity kiosks in each property
- Teach staff on how to use the website and what is available on the website

Appendix M: Navigation Bar Design

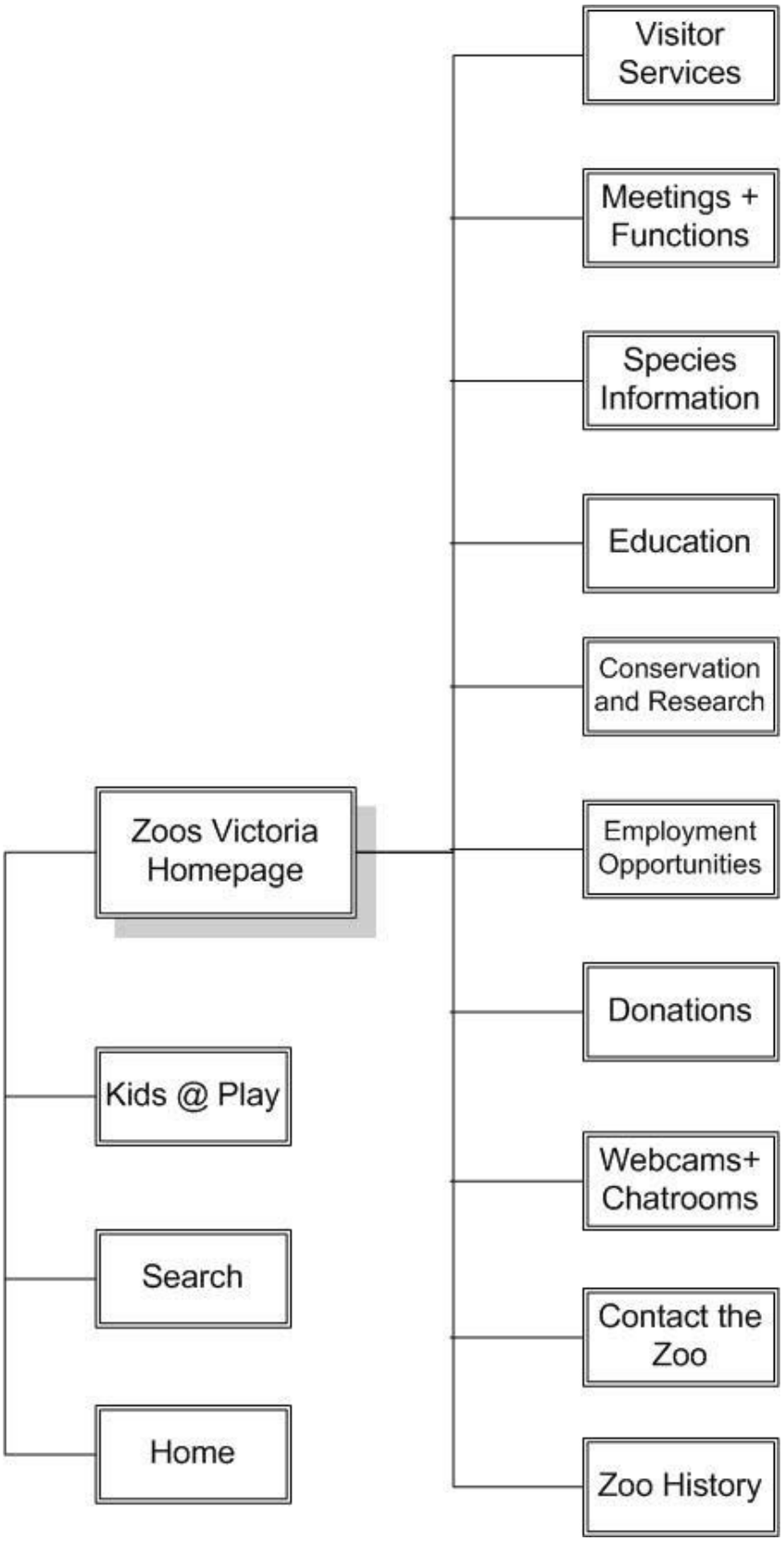

Figure 62. Navigation Bar Design

Appendix N: Online User Survey

The following are questions intended for use in an online evaluation of the website by website users. All questions and formats are only suggestion and have not yet been pre-tested. These questions can be used as a feedback form once the website has been redesigned, but will need to be updated as the content changes.

Questions for User Survey

1.) What is your age? (Pull-down menu)
   a) Under 16
   b) 16-18
   c) 18-25
   d) 25-35
   e) 35-45
   f) 45-55
   g) 55-65
   h) Over 65
2.) Please specify your gender. (Pull-down menu)
   a) Male
   b) Female
3.) What facility are you interested in: (Check all boxes that apply)
   a) Healesville Sanctuary
   b) Melbourne Zoo
   c) Victoria's Open Range Zoo
   d) None
4.) Are you: (Check all boxes that apply and other comments box)
   a) Planning a visit to one of the facilities
   b) Already visited
   c) Not visiting – live too far away
   d) Not visiting – no interest
   e) Other: Please Specify
5.) Why are you visiting the website? (Check all boxes that apply and other comments box)
   a) Planning a Visit
   b) Planning an Event or Function
   c) Friends of the Zoos Information
   d) Animal Information
   e) Plant Information
   f) Sponsorship Information
   g) Upcoming Events
   h) Information about Zoos Victoria History
   i) Environmental Protection & Conservation Information
   j) Children's Section
   k) Games
   l) Webcams

m) Employment Information
n) Volunteer Information
o) Donations Information
p) Looking for Injured Wildlife Hotline
q) Other: Please Specify

6.) Rate the site on navigation. (Comments box)
7.) Where there any resources you were looking for you could not find on the website? (Pull-down menu and comments box)
a) Yes
b) No
c) If yes, what?
8.) What did you most enjoy on our website? (Pull-down menu and other comments box)
a) Animal Information
b) Plant Information
c) Wildlife Photographs
d) Upcoming Events Calendar
e) Children's Section
f) Games
g) Webcams
h) E-cards
i) Other: Please Specify
9.) How could this website better suit your needs? (Comments box)
10.) Other Comments Box

Appendix O: Website Evaluation Tool

Beginning at the home page, find the following areas of the website without the use of a search feature. The numbers in the parentheses are the weightings given to each area depending on its significance. A weighting of one is least important and three is most important. Record the time (in seconds) it takes to find each area.

1) Current exhibits (3)
2) Admission times and prices (3)
3) School programs (2)
4) Directions (3)
5) Games/Children's section (3)
6) Contact information (2)
7) Donations (2)
8) Employment and Volunteer Opportunities (2)
9) Conservation and Research (1)
10) Upcoming Events (1)

After finishing the above tasks, return to the homepage and explore the site. Once you feel comfortable with the layout and site purpose, answer these questions in Table 15, on a scale from one to three. A score of zero should be given if the site does not feature the attribute. Each attribute is weighted from one to three based on its importance.

Table 15. Website Evaluation Tool Questions

Analysis Categories:	**Weighting**
1) Content	
a) Useful and Informative Content	
i) Is there a Glossary?	1
ii) Is the date of creation provided on each page?	1
iii) Is the date of last update provided on each page?	
iv) Does the site contain a statement of purpose?	1
v) Are acronyms and abbreviations described before being used?	1
vi) How useful do you find the site's content?	2
vii) Are organisation contact details provided on the website?	1
viii) Is new information indicated?	1
ix) Is a set of Frequently Asked Questions included?	1
b) Spelling and Grammar	
i) Does the textual content use correct spellings?	1
ii) Does the textual content use correct grammar?	1
iii) Is the standard of writing suitable for the target audience?	1
c) Hyperlinks	
i) Are the site's hyperlinks functioning?	2

ii) Are there links to other websites?	1
2) Aesthetics	
a) General	
i) Is the website's look consistent?	2
ii) Is the general look of the website visually appealing?	2
iii) Do headings stand out on the page?	1
iv) Are tables and figures aligned correctly?	1
v) Is white space used effectively?	1
b) Colour and Contrast	
i.) Is the text easy to read? (high contrast is preferred)	2
ii.) Do the colours draw attention to the most important items?	1
iii.) Does the colour scheme appeal to the reader?	1
c) Font	
i) Is the formatting of text consistent?	1
ii) Is text left justified?	1
iii) Is the font easy to read?	2
d) Graphics	
i) Do the graphics pertain to the topic of the webpage?	1
ii) Do the graphics blend with the look of the webpage?	1
iii) Do the graphics have explanatory captions or related articles?	1
iv) Do the graphics have ALT text?	1
v) Are the graphics reasonable in file size?	1
vi) Are the graphics reasonable in display size?	1
3) Navigation, Structure, and Layout	
a) Clarity	
i) Are headings parallel?	1
ii) Are headings brief and informative?	1
iii) Is there at least one heading on each page?	1
iv) Do major topics begin on separate pages?	1
b) Navigation Bar	
i) Can the visitors reach the homepage from any page?	2
ii) Can the visitors in one section move to another without returning to the homepage?	1
iii) Rate the site on navigation.	3
c) Site Map	
i) Is there a site map?	3
ii) Is the site map useful?	1
d) Search Feature	
i) Is there a search feature?	2
ii) Is the search feature useful?	2
e) Homepage	
i) Is it immediately clear what organisation's website you are on?	2
ii) Is the logo in the top left corner?	1
iii) Is the load time for the homepage excessive?	2
4) Technology	
a) Webcams and Video	
i) Rate the video quality.	1
ii) Rate the audio quality.	1
iii) Is previous footage of the animals available for after hours display?	1

b) Games	
i) Are there educational games?	2
ii) Are the games interactive?	2
iii) Do the games cover a wide range of age groups?	1
iv) Do the games have colour?	1
v) Rate the quality of the games.	2
c) Connection Speed	
i) Do all the pages load in a reasonable amount of time?	3
5) Misc	
a) General	
i) Does the website accommodate users with disabilities?	3
ii) Is there an e-mail newsletter on a regular basis?	1
b) Ease of Finding Site	
i) Does the website address make sense to the user?	1
ii) Can the website be found by searching for the name or type of business with a major search engine?	1
c) Browser Compatibility	
i) Is the website compatible with popular browsers (Internet Explorer, Netscape)?	2
d) User Feedback	
i) Is it easy for the user to provide feedback?	2
ii) Is there a user survey?	1
iii) Is there webmaster contact information with a mailto: link?	1
6) Other Comments (no ranking numbers)	
a) What formats can documents be downloaded?	
b) If the pages do not load quickly, is there a page explaining the delay?	

In order to calculate an individual evaluator's score, the timed section and questions section are summed. To find the result for an individual zoo within each area of the timed section, the lowest score is subtracted from each zoo's score. That number is then divided by the difference between the highest and the lowest scores. The normalized number is then multiplied by the weighting to give the full amount of the timed section. To find the total for the questions section, multiply the score by the weighting number. Then, sum all the adjusted scores to give the total for the questions section. Finally, add the result from the timed section and the product from the questions section.

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